Public Works Department
Bombay Province

Irrigation Administration Report

Province of Bombay

Part I

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

For the Year 1936-37

133244

BOMBAY
PRINTED AT THE GOVERNMENT CENTRAL PRESS
1938

Obtainable from the Superintendent, Government Printing and Stationery, Bombay, or through the High Commissioner for India, India House, Aldwych, London, W.C.2, or through any recognized Bookseller

[Price—Re. 1 As. 5 or 2s. 3d.]

gitized with financial assistance from t
Government of Maharashtra
on 22 July, 2017

CONTENTS

	Pages
[redacted] Gujarat	At the beginning of the Report.
[redacted]expenditure on irrigation works from loan funds and revenue.	
[redacted] expenditure on establishment in the Roads and Buildings Branches.	
[redacted]ption of Irrigation	1–2

SECTION I.

COMPRISING IRRIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

[redacted]l Remarks	3–11

DETAILED REPORTS BY LOCAL OFFICERS.

Northern Circle.

Hathmati and Khari Cut Canals	12–13
First Class Irrigation Tanks in Gujarat	13–14
Wangroli Tank	14–15
Savli Tank	
Saiat Tank	
Tranza Nagrama Tanks	
Futelao Tank	

Deccan Irrigation Circle.

Diagram showing Working Record for Nira Right and Left Bank Canals ..	Facing p. 16
Diagram showing Financial Record for Nira Right and Left Bank Canals.	
Lloyd Dam at Bhatgar and Nira Right Bank Canal	17–18
Mhaswad Tank	19–20
Nira Left Bank Canal	20
Nira Valley Development Project	21–22
Mutha Canals	22–23
Kasurdi Tank	23–24
Shirsuphal Tank	
Bhadalwadi Tank	
Diagram showing Combined Working Record of Godavari and Pravara Canals.	Facing p. 24
Diagram showing Combined Financial Record of Godavari and Pravara Canals.	
Godavari Canals	25–26
Photograph—Lining of Malegaon Cut view showing Brick Lining with Canal Dry.	Facing p. 26
Chankapur Tank—Girna Canal	26–27
Kadwa River Works	27–29
Parsul Tank	29
Pravara River Works	30–31
Photograph—View of Ojhar Weir showing part of its crest raised by two feet with cement concrete coping	Facing p. 30
Bhatodi Tank	32

Central Circle.

Krishna Canal	33–34
Rewari Canal	
Upper Man River Works	
Yerla River Irrigation Works	
Chikhli Canal	
Maini Tank	
Ekruk Tank	35
Koregaon Tank	
Ashti Tank	
Pathri Tank	

	PAGES
Central Circle—contd.	
Jamda Canals	36
Mhaswa Tank	
Hartala Tank	37
Shahada Channel	37
Lower Panjhra River Works	37–38
Southern Circle.	
Gadikeri Tank	38
Gokak Canal	38–39
Muchkundi Tank	39
Dambal Tank	40
Medleri Tank	
Madag Tank	
Asundi Tank	
Dharma Canal	41
Mavinkop Tank	
SECTION II.	
COMPRISING IRRIGATION WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.	
General Remarks	42
Table I, showing area irrigated, consolidated land revenue and water rates	42
Table II, showing actual expenditure and receipts on Irrigation Works ..	44–45
DETAILED REPORTS BY LOCAL OFFICERS.	
Northern Circle.	
Khari sluices	46–47
Muwalia Tank	47
Old Tanks	47–48
Drainage Channels	48
Deccan Irrigation Circle.	
Rakh Tank	48
Khamgaon Tank	
Effluent irrigation on the Mutha Right Bank Canal	49
Bandharas (Poona District)	
Khirdi Sathe Tank	
Bandharas (Nasik District)	50
Visapur Tank	50
Khuntephal Tank	51
Mandavgan Tank	
Central Circle.	
Wadshivne Tank	52
Talwada Tank	
Old works	52–53
Southern Circle.	
Second Class Irrigation tanks in Belgaum, Dharwar, Kanara and Ratnagiri Divisions	53–54
SECTION III.	
Irrigation Research Division	55–57
Statement I-E, showing areas irrigated and average discharges and duties of water in regard to irrigation works during 1936–37	58–65
Statement I-F, showing water rates per acre in force during 1936–37 ..	66–70
Statement showing expenditure on establishment in the Roads and Buildings and the Irrigation Branches	71
Government Resolution reviewing the Report	73–74

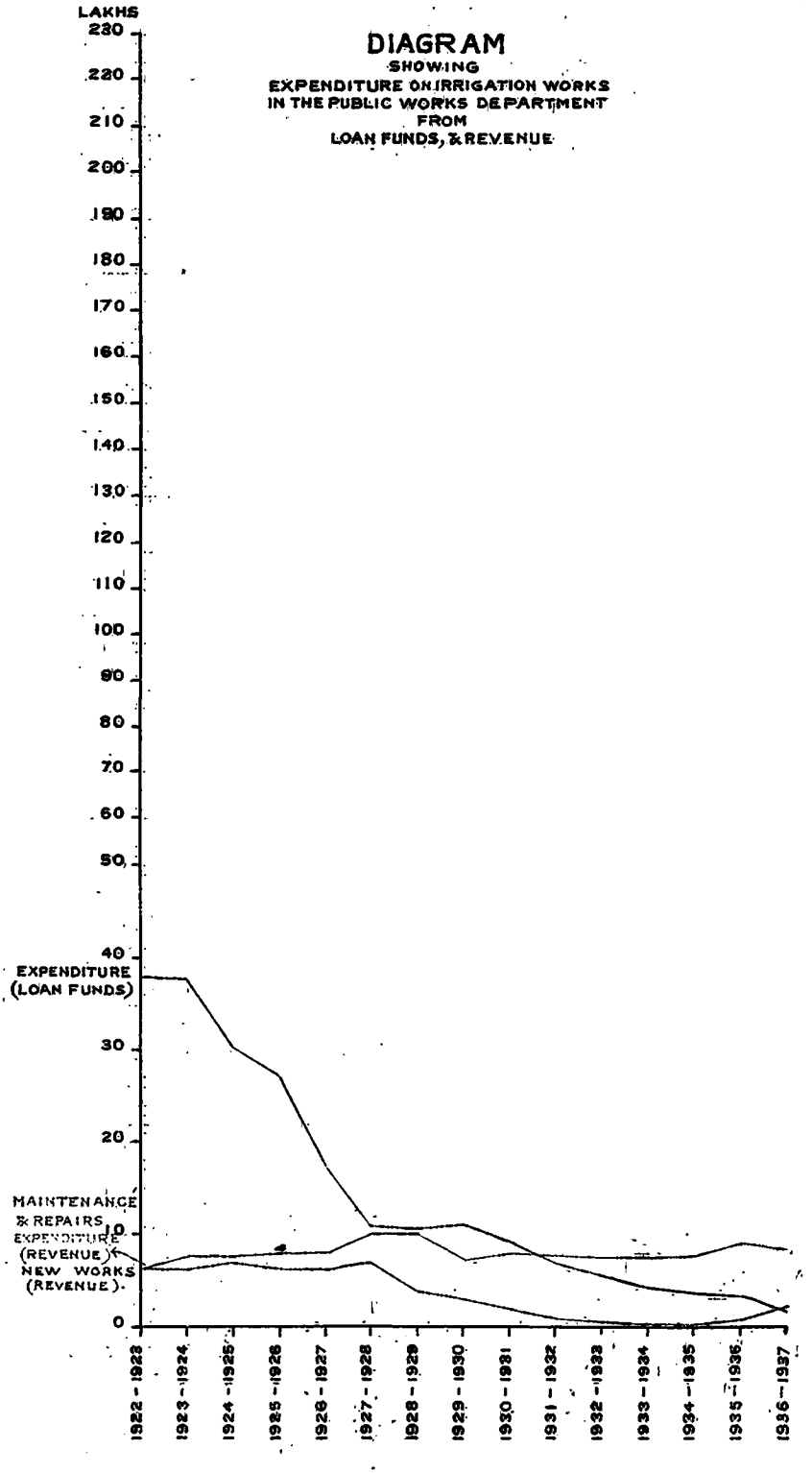
MAP OF THE BOMBAY DECCAN & GUJARAT

TO ACCOMPANY THE IRRIGATION ADMINISTRATION REPORT FOR 1936-37

SCALE 16 MILES TO 1 INCH

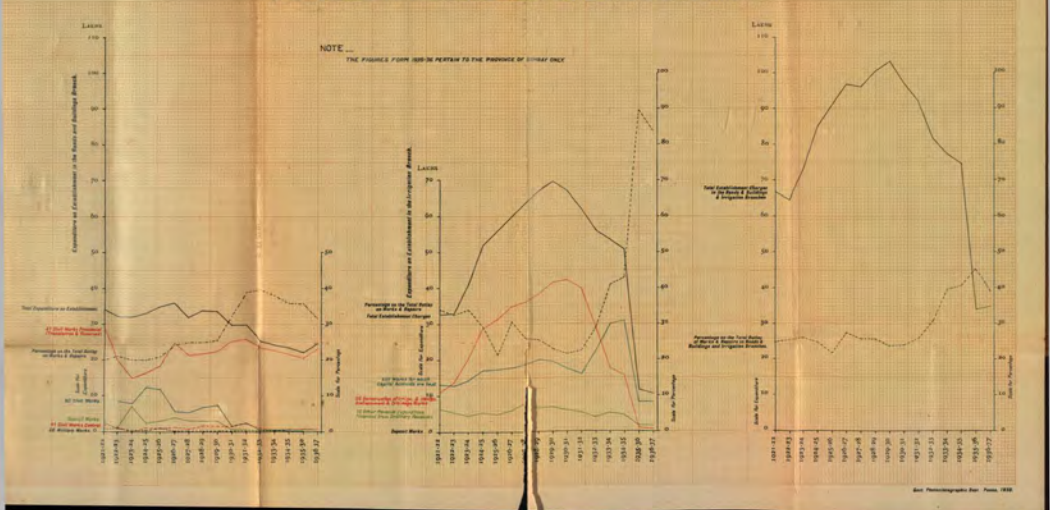
DIAGRAM

SHOWING
EXPENDITURE ON IRRIGATION WORKS
IN THE PUBLIC WORKS DEPARTMENT
FROM
LOAN FUNDS, & REVENUE



G.P.Z.O. POONA, 1938.

DIAGRAM SHOWING EXPENDITURE
ON ESTABLISHMENT
IN THE
ROADS & BUILDINGS & IRRIGATION BRANCHES
OF THE
PUBLIC WORKS DEPARTMENT
AND
PERCENTAGES TO THE TOTAL OUTLAY ON WORKS AND REPAIRS


NOTE :-
THE FIGURES FORM 1935-36 PERTAIN TO THE PROVINCE OF SIND ONLY.
Lakhs
Expenditure on Establishment in the Roads and Buildings Branch.
Scale for Quantities
Scale for Percentage
Total Expenditure on Establishment
Percentage on the Total Outlay on Works & Repairs
Expenditure on Establishment in the Irrigation Branch.
Total Establishment Charges in the Roads & Buildings & Irrigation Branches
Percentage on the Total Outlay on Works & Repairs in the Roads & Buildings and Irrigation Branches

Govt. Photolithographic Instn. Poona. 1938

IRRIGATION ADMINISTRATION REPORT, PROVINCE OF BOMBAY—PART I 1936-37

PHYSICAL FEATURES—GENERAL DESCRIPTION OF IRRIGATION.

The area under irrigation in the Province of Bombay is not compact. Rainfall is available for agricultural operations but is often precarious. Tanks and canals provide irrigation for valuable crops such as sugarcane and also provide a source of supply to other crops when the rainfall is deficient or irregular. The old irrigation works consist chiefly of a few small canals and moderately large tanks, some 12,000 smaller tanks mostly in the southern part of the Province and in Gujarat, and of about 400 bandharas in Nasik and Khandesh Districts. The tanks have earthern dams and the larger ones irrigate areas up to 1,300 acres, and the smaller ones up to 500 acres, situated immediately below the dams. The chief crop irrigated is rice. The bandharas are masonry weirs built across rivers to head up the water to a level sufficient to irrigate lands on the banks of the streams by means of channels taking off from the flanks of the bandharas. The areas irrigated are up to 800 acres and the chief crops are sugarcane, wheat, bajri and gram. From these small beginnings have evolved the magnificent irrigation works, which now form such a conspicuous feature in the Deccan and have so successfully fulfilled their beneficent purpose in banishing the famines which formerly devastated this portion of the Province.

2. The irrigation works in the Deccan are fundamentally different from those in Sind, the Punjab, Egypt or Mesopotamia, where wide alluvial plains have been formed by great deltaic rivers in perennial flow. The Bombay Deccan consists of a sloping table-land running eastward from the ridge of the Western Ghats. These form a ridge running parallel to the sea-coast at a distance from it of 50 to 100 miles; precipituous on the western side, they fall away more gradually to the east. The heaviest rainfall occurs on the peak of the ridge, where anything up to 270 inches of rain is recorded in the four monsoon months. The intensity of the rainfall rapidly decreases as we go eastward from the highest ridge, reaching a figure of 20 or 25 inches at a distance of 100 or 150 miles east of the Ghats. The rivers in the Deccan rise in the valleys close to the ridge, flow in an eastward direction, and are dry or practically so for 7 or 8 months of the year. The line of the Ghats, like the ridge of a roof, divides the rainfall into two parts; one the smaller portion falling westward into the Indian Ocean, and the other flowing through long lengths of tortuous rivers to the east and joining the rivers, which reach the sea on the south eastern coast of the peninsula. These rivers are in flow during the

monsoon months only, and if no artificial means of conserving their waters were provided, the whole monsoon rainfall would be wasted so far as the Bombay Deccan is concerned, and would simply flow away to the sea, benefitting but to a small extent the country traversed.

3. The large irrigation systems in the Deccan are all of the same type. Each depends upon a storage lake near the head of one of the river valleys, where sufficient water is collected during the monsoon to supply the country on either side of the river valley below. The water stored during the rains is let out during the dry months of the year in accordance with requirements; and at a point on the river, which may be as far as 50 miles from the main storage lake, a " pick-up-weir " is constructed across the river-course to divert the water into canals which take off on either side of the weir. In one case only, that of Lake Fife at Khadakwasla near Poona, do the canals take off from the flanks of the dam itself. The canals are always constructed at a considerably flatter slope than that of the river, and consequently are able to diverge from the river itself on each side of the valley; as a rule each canal only irrigates the area between itself and the river.

SECTION I.

COMPRISING IRRIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

Works in operation.

4. The following list includes all the works in operation (43 in number) :—

Serial Number.	Name of Work.	Area of four months crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
		Acres.			
1	Hathmati and Khari Cut Canals.	24,000	Dependent on local rain.	No storage work. Bokh reservoir, Chandola tank and Wasai reservoir completed.	The catchment of the Hathmati river is hilly, covered partly with forest and that of the Khari is undulating ground at its source and then plain ground with cultivated fields. The supply depends upon the flow in the rivers, and the contents of the Bokh reservoir, Chandola tank and Wasai reservoir.
2	Wangroli Tank ..	3,400	Do. ..	Completed ..	The catchment is ordinary plain ground and cultivated fields.
3	Savli Tank ..	3,000	Do. ..	Do. ..	Ordinary catchment on undulating ground.
4	Saiat Tank ..	2,000	Do. ..	Do. ..	Ordinary catchment on flat ground.
5	Tranza Nagrama Tanks.	800	Do. ..	Do. ..	The Tranza tank has no independent catchment. The Nagrama has a catchment of 1·5 square miles. Both are fed by the Matar drainage channel which is not reliable as it seldom flows.
6	Futalao Tank ..	800	Do. ..	Do. ..	Hilly catchment.
7	Nira Left Bank Canal including Shetphal Tank.	100,000	Reliable ..	Lake Whiting (Lloyd Dam) completed.	Ghat catchment.
8	Nira Right Bank Canal.	180,000	Do. ..	Do. ..	Do.
9	Mhaswad Tank ..	14,000	Dependent on local rain.	Completed ..	Deccan catchment.
10	Mutha Canals including Matoba Tank.	49,000	Reliable ..	Lake Fife completed.	Ghat catchment.
11	Kasurdi Tank ..	40	Dependent on local rain.	Completed ..	Deccan catchment.
12	Shirsuphal Tank ..	1,150	Do. ..	Do. ..	Do.
13	Bhadalvadi Tank ..	1,225	Do. ..	Do. ..	Do.

Serial Number.	Name of Work.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
		Acres.			
14	Godavari Right Bank Canal.	44,000	Reliable ..	Lake Beale completed.	Ghat catchment.
	Godavari Left Bank Canal.	26,000			
15	Girna Canal ..	9,000	Do. ..	Chankapur Tank completed.	Do
16	Kadwa River Works. Palkhed Canal. Ojar Tambat Canal. Wadali Canal ..	7,689	Do. ..	Waghad Tank completed.	Do.
17	Parsul Tank ..	1,440	Dependent on local rain.	Completed ..	Deccan catchment.
18	Pravara Right Bank Canal.	18,480	Reliable ..	Lake Arthur Hill (Wilson Dam) completed.	Ghat catchment.
	Pravara Left Bank Canal.	64,080			
19	Bhatodi Tank ..	1,461	Dependent on local rain.	Completed ..	Deccan catchment.
20	Ekruk Tank ..	13,070	Do. ..	Do. ..	Do.
21	Koregaon Tank ..	416	Do. ..	Do. ..	Hilly catchment.
22	Ashti Tank ..	3,382	Do. ..	Do. ..	Deccan catchment.
23	Pathri Tank ..	3,094	Do. ..	Do. ..	Hilly catchment.
24	Jamda Canals ..	42,000	Girna river supply not reliable.	Water is issued from the Chankapur Tank when available.	Ghat catchment for a small part and for the rest Deccan catchment.
25	Hartala Tank ..	978	Dependent on local rain.	Completed ..	Deccan catchment.
26	Mhaswa Tank ..	3,256	Do. ..	Do. ..	Do.
27	Shahada Channel ..	2,000	Reliable ..	No storage work ..	Hilly catchment. Supply is perennial.
28	Lower Panjhra River Works.	8,173	Panjhra river supply not reliable.	Mukti Tank completed.	Ghat catchment for one part and Deccan catchment for the rest.
29	Krishna Canal ..	6,412	Reliable ..	Proposed ..	Ghat catchment.
30	Rewari Canal ..	439	Dependent on local rain.	No storage work ..	Deccan catchment.
31	Upper Man River Works.	373	Do. ..	Pingli Tank completed.	Do.
32	Yerla River Irrigation Works.	1,182	Do. ..	Nehr Tank completed.	Do.
33	Chikhli Canal ..	358	Do. ..	No storage work ..	Do.

Serial No.	Name of work.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
		Acres			
34	Maini Tank ..	455	Dependent on local rain.	Completed ..	Deccan catchment.
35	Gadikeri Tank ..	416	Do. ..	Do. ..	Do.
36	Gokak Canal ..	17,627	Reliable ..	27' completed .	Ghat catchment.
37	Muchkundi Tank ..	750	Dependent on local rain.	Completed ..	Deccan catchment.
38	Dambal Tank ..	531	Do. ..	Do. ..	Do.
39	Medleri Tank ..	231	Do. ..	Do. ..	Do.
40	Madag Tank ..	1,418	Do. ..	Do. ..	Ghat and Forest catchment.
41	Asundi Tank ..	503	Do. ..	Do. ..	Deccan catchment.
42	Dharwa Canal ..	For monsoon season 6,580 acres. For rabi nil.	Do. ..	No storage work. The canal takes off from the river itself.	Forest catchment.
43	Mavinkop Tank ..	617	Do. ..	Completed ..	Do.

Ekruk tank, Gadikeri tank, Mavinkop tank and Shahada channel are the only productive works and the rest are unproductive.

5. The interest account for the year was as follows :—

	Productive Works.	Unproductive Works.	Total.
	Rs.	Rs.	Rs.
Total interest charges during 1936-37 ..	46,393	41,42,361	41,88,754
Net revenue realised during 1936-37 ..	1,41,389	11,95,322	13,36,711

Net loss, i.e., difference between interest and net revenue—Rs. 28,52,043.

6. The financial results of the year by main heads were as under :—

	Area irrigated.	Revenue realised.			Working expenses.	Net revenue.
		Direct receipts.	Share of land revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	7,191	1,57,767	9,959	1,67,726	26,337	1,41,389
Unproductive	306,782	28,87,381	11,534	28,98,915	17,03,593	11,95,322
Total ..	313,973*	30,45,148	21,493	30,66,641	17,29,930	13,36,71

* Inclusive of 8,758 acres under consolidated assessment.

The gross revenue and the net revenue show increases of Rs. 2,36,574 and Rs. 2,29,644 respectively, as compared with the figures for the previous year.

Areas irrigated revenue, etc.

7. The figures of irrigated area, revenue assessed and realised and working expenses, as compared with those of the previous three years, are given below :—

Year.	Area irrigated.	Revenue.		Working expenses.
		Assessment.	Realisations.	
	Acres.	Rs.	Rs.	Rs.
1933-34	213,047	24,04,530	25,45,579	15,14,400
1934-35	214,253	25,66,862	29,96,085	15,45,418
1935-36	214,303	28,03,346	28,30,067	17,23,000
Average ..	213,868	25,91,579	27,57,243	15,94,273
1936-37	313,973*	34,77,222	30,66,641	17,29,930

*Inclusive of the area under consolidated water and land assessment.

8. The gross area under command is 1,799,000 acres. The area irrigable at present is 600,000 acres.

9. The state of Revenue collections was as follows :—

	Rs.	Rs.
Balance of demands unrealised at the commencement of the year		16,06,635
Demands of the year—		
Rabi 1935-36 ..	3,50,100	
Kharif 1936-37 ..	23,24,369	
Miscellaneous receipts ..	4,88,157	31,62,626
Total ..		47,69,261
Deduct—		
Remissions		38,059
Net total ..		47,31,202
Amount unrealised at the close of the year ..		16,77,334

	Rs.	Rs.
Actual receipts of the year ..	30,53,868	
Add—Share of land revenue ..	21,493	
		30,75,361
Deduct—Refunds of revenue		8,720
Revenue realised		30,66,641

The remissions and refunds together amounted to Rs. 46,779.

Unrealised irrigation revenue at the close of the year amounted to Rs. 16,77,334 which is made up as follows :—

	Rs.
Ekruk Tank	6,034
Hathmati and Khari Cut Canals	36,999
Krishna Canal	68,824
Ashti Tank	5,379
Lower Panjhra River Works	6,841
Mutha Canals and Matoba Tank	1,26,513
Gokak Canal	18,427
Mhaswad Tank	9,776

	Rs.
Jamda Canals	6,954
Pathri Tank	5,243
Nira Left Bank Canal and Shetphal Tank ..	3,19,527
Kadwa River Works	86,888
Chankapur Tank—Girna Canal	54,537
Godavari Canals	1,85,600
Nira Right Bank Canal	3,94,666
Pravara River Works	3,24,565
Other Works	20,561
Total ..	16,77,334

Working expenses.

10. The working expenses of the year amounted to Rs. 17,29,930 as compared with Rs. 17,23,000 during the previous year. The following table compares the charges under the principal heads with those of the previous three years :—

	1933-34.	1934-35.	1935-36.	1936-37.
	Rs.	Rs.	Rs.	Rs.
Works	23,069	38,862	67,604	1,85,616
Repairs	5,38,258	5,56,315	6,64,485	5,93,823
Establishment	8,84,686	8,69,891	9,11,468	8,68,902
Tools and Plant	8,019	9,177	10,078	8,805
Total in the Public Works Department ..	14,54,032	14,74,245	16,53,635	16,57,146
Collection charges	54,762	65,228	62,049	64,992
Indirect charges	5,606	5,945	7,316	7,792
Total working expenses ..	15,14,400	15,45,418	17,23,000	17,29,930

11. The following table gives the details of working expenses for some of the principal works :—

Details of working expenses.

Name of work.	Average incidence of water rate per acre.	Cost of measurement.		Working expenses in the P. W. Department.	
		Total cost.	Per acre.	Per mile of canal.	Per acre irrigated.
	Rs.	Rs.	Rs. a. p.	Rs.	Rs.
Nira Left Bank Canal and Shetphal Tank	10·22	1,512	0 0 5	1,946	2·54
Pravara Canals	12·28	1,075	0 0 6	3,512	7·30
Girna Canal	11·74	773	0 1 2	2,838	4·24
Godavari Canals	9·36	915	0 0 6	2,723	7·80
Mutha Canals and Matoba Tank ..	11·48	1,036	0 1 1	1,036	5·34
Kadwa River Works	10·02	95	0 0 6	1,236	9·90
Mhaswad Tank	5·03	77	0 0 3	212	3·11
Nira Right Bank Canal	8·47	857	0 0 3	2,199	7·08
Krishna Canal	15·65	492	0 2 2	343	6·02
Yerla River Irrigation Works ..	5·70	493	0 1 10	353	2·69
Upper Man River Works ..	5·84	31	0 0 7	886	18·27
Jamda Canals	7·04	71	0 0 8	436	9·82
Ekruk Tank	6·71	236	0 0 10	397	4·41
Ashti Tank	5·31	143	0 0 7	418	3·05
Maini Tank	5·23	73	0 1 4	500	5·18
Gokak Canal	5·47	663	0 1 3	231	1·44
Dharma Canal	5·01	186	0 6 2	78	0·37

12. The gross assessed revenue, direct and indirect, amounted to Rs. 34,77,222 as compared with Rs. 28,03,346 in the previous year. The details of the gross assessment are as under:—

Gross assessed revenue.

	Direct revenue.			Indirect revenue.	Total.
	Water rate.	Other receipts.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	35,264	1,25,114	1,60,378	9,959	1,70,337
Unproductive	29,32,308	3,63,043	32,95,351	11,534	33,06,885
Total ..	29,67,572	4,88,157	34,55,729	21,493	34,77,222

The net assessed revenue of the year, after deducting working expenses (Rs. 17,29,930), amounted to Rs. 17,47,292 as compared with Rs. 10,80,346 during the previous year.

13. The following table gives the percentage return earned during the year on capital outlay on the principal works in operation :—

—	Total capital outlay (direct and indirect).	Gross receipts (direct and indirect).	Working expenses (direct and indirect).	Net revenue.	Percentage return on capital outlay.
	Rs.	Rs.	Rs.	Rs.	
Ekruk Tank	13,40,386	1,48,884	19,066	1,29,818	9·68
Hathmati and Khari Cut Canals ..	13,18,729	37,069	39,701	—2,632	..
Nira Left Bank Canal and Shetphal Tank.	1,44,41,052	7,06,090	2,06,510	4,99,580	3·46
Nira Right Bank Canal ..	4,12,29,408	2,71,215	3,58,490	—87,275	..
Mhaswad Tank	20,96,016	20,909	13,996	6,913	0·33
Mutha Canals and Matoba Tank ..	69,80,904	4,12,954	91,244	3,21,710	4·61
Godavari Canals	1,05,71,419	4,28,680	3,32,234	96,446	0·91
Chankapur Tank—Girna Canal ..	20,56,431	90,592	51,087	39,505	1·92
Kadwa River Works	10,35,876	23,770	29,673	—5,903	..
Pravara River Works	1,50,23,369	6,19,528	4,03,895	2,15,633	1·43
Lower Panjhra River Works ..	4,68,621	25,042	4,148	20,894	4·46
Krishna Canal	9,49,807	76,351	21,964	54,387	5·73
Gokak Canal	14,66,673	66,312	11,959	54,353	3·70

14. The average water rates per acre of land actually irrigated were :—

	Rs.
Productive works	6·67
Unproductive works	9·80

15. The water rate assessments and other receipts compare with those of the previous year as under :—

	1935-36.	1936-37.
	Rs.	Rs.
Water rates	23,30,036	29,67,572
Other receipts—		
Plantations	7,773	12,368
Water power	14,313	14,313
Miscellaneous	4,26,998	4,61,476
Total ..	4,49,084	4,88,157
Share of land revenue	24,226	21,493
Grand Total ..	28,03,346	34,77,222

16. The principal crop acreages irrigated during 1935–36 and 1936–37 are given below :—

	1935–36.	1936–37.
	Acres.	Acres.
Garden and orchards	6,442	7,002
Sugarcane	45,107	60,275
Wheat	7,426	16,065
Rice	6,577	2,205
Jowar	33,014	83,474
Bajri	9,834	18,475
Gram, etc.	12,570	11,695
Groundnut	10,060	17,847
Cotton	23,148	22,997
Condiments	6,080	6,799

The total estimated value of the crops irrigated was Rs. 183·20 lakhs as compared with Rs. 153·20 lakhs during the previous year.

17. The following table shows the total number of ordinary wells in actual use, total area irrigated by them, etc., during the year under report :—

Total number of ordinary wells in actual use.	Total area irrigated by wells shown in column 1 during 1936–37.	Total number of wells in working order but not used.	Total number of abandoned wells.
1	2	3	4
	Acres.		
303,104	707,045	52,599	53,077

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

The year under review was characterised by a poor monsoon which broke about the middle of June and ended by the 15th of September. The rainfall was much below the average and of very low intensity. It was not sufficient for storage nor for the watering of the paddy crops and at some places it was inadequate even for monsoon dry crops. There was very little run-off from the catchments of the rivers. The little available flow in the Hathmati river was utilised in filling up the Bokh Reservoir and some village tanks. The total area protected by irrigation under the Hathmati and Khari Cut Canals, including the area in the Kalambandhi villages under the Khari Sluices, was about 852 acres.

The rainfall gauged at Ahmedabad and Prantij was 22·17 and 17·06 inches, respectively, as compared with 34·45 and 36·29 inches, the average precipitation, respectively, of the last three years. Similarly, at Bareja which is situated in the centre of the area irrigated by the Khari Cut Canal, the rainfall was 18·11 inches as compared with 28·39 inches, the average of the last three years. At Himatnagar, where the Head Works of the Hathmati Canal are situated, it was 15·59 inches as compared with 35·11 inches, the average of the last three years.

The principal irrigation works in operation in the Northern Circle are (1) the Hathmati and Khari Cut Canals, (2) the Wangroli Tank, (3) the Savli Tank, (4) the Saiat Tank, (5) the Tranza Nagrama Tanks and (6) the Futelao Tank. No. (1) has no arrangement for storage and depends on local rainfall. The other works are small storage tanks, but they also depend on local rainfall.

The six works are financially unproductive, the annual revenue derived therefrom being generally insufficient to cover their working expenses.

AHMEDABAD AND KAIRA AND PANCH MAHALS DIVISIONS.

HATHMATI AND KHARI CUT CANALS.

This is the most important canal system in Gujarat. The Hathmati Canal irrigates a tract of land lying between the Sabarmati and Khari rivers and this system, in addition to irrigating the area dependent on it, is designed to pass surplus water, when available, first into the Bokh Reservoir and then into the Khari river direct *via* the Bhujwa Channel. The Bokh Reservoir does not provide any direct irrigational supplies but only acts as a storage reservoir for the Khari Cut Canal. Further downstream on the Khari river are situated two small irrigation systems and these utilise the natural flow of the river and also any surplus water which can be made available from the Hathmati Canal; the Khari water is abstracted at the so-called "Khari sluices" for direct irrigational purposes, while the surplus water from the Hathmati is diverted through an artificial cut, called "the Khari Cut", into a natural channel, and this in its turn supplies a system of distributaries, several small tanks and the large Chandola Tank situated near Ahmedabad. The system was first opened in 1873–1874 and has cost more than Rs. 13 lakhs.

The rainfall in the catchment of the Hathmati river being much below the average and of low intensity there were no floods in that river which could be utilised for storage purposes. Due to less rain in the earlier part of the season, the cultivators did not attempt to raise rice crop in the Prantij Taluka with the result that the area under rice transplantation was much less than normal. The area transplanted with rain water was protected by the canal water and the remaining water that was drawn from the Hathmati river was utilised in filling the Bokh Reservoir and some village tanks in the Prantij Taluka for domestic use.

The area irrigated under this canal was 62 acres in the Kharif season and 63 acres in the Rabi season as compared with 805 acres in the Kharif

season and 1,697 acres in the Rabi season of the previous year. The decrease in the area irrigated was due to scanty rainfall during the year. The average daily discharge admitted into the Canal at its head during the Kharif season, was 22 cusecs, of which quantity only 12 cusecs were utilised for irrigation under this canal and the balance was let down into the Bokh Reservoir and the Khari Cut Canal through the Bhujwa channel for supply to irrigation under the Khari sluices and for filling some village tanks of the Daskroi Talukas for domestic purposes.

The Khari rose in flood moderately only thrice during the earlier part of the monsoon. Owing to deficient rainfall at the beginning of the season the whole area commanded by this Canal remained practically uncultivated and the little irrigation that was done was a total failure. The area irrigated under the canal during all the seasons was 4 acres only as compared with 5,123 acres in the previous year.

The area irrigated, the revenue assessed, and the working expenses in connection with the Hathmati and Khari Cut Canals compare with the average of the three preceding years as under :—

	Kharif.		Rabi.		Total.		Working expenses.
	Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Average	10,985	66,648	3,612	10,276	14,597	76,924	37,511
1936-37	66	127	63	105	129	232	39,701

The remissions granted during the year amounted to Rs. 35. The gross revenue realised from all sources amounted to Rs. 36,675 while the working expenses were Rs. 39,701. These figures show a deficit of 0·23 per cent. on the total capital outlay.

The work of constructing a high level causeway over the Bhujwa channel near Mehmedpur village, taluka Prantij, was completed during the year at a cost of Rs. 4,284 against the estimated amount of Rs. 4,295. The causeway will remove a longfelt want of the surrounding agriculturists and enable them to cross the Bhujwa channel during the monsoon.

First Class Irrigation Tanks in Gujarat.

The five first class tanks, viz., Wangroli, Savli, Saiat, Tranza Nagrama and Futelao were constructed between the years 1904 and 1917 at the aggregate cost of Rs. 11 lakhs. They rarely yield any net return, and the demand for water from them is small in years of good rainfall, while in years of scarcity the tanks themselves store deficient supply. The first four tanks are situated in the Kaira Collectorate, while the last one is in the Broach and Panch Mahals Collectorate.

The area irrigated, the revenue assessed and the working expenses in connection with the tanks during the year are compared with the average of the preceding three years as under :—

Name of tank.	Year.	Kharif.		Rabi.		Total.		Workings. expense
		Area irrigated.	Assessment.	Area irrigated	Assessment.	Area irrigated	Assessment.	
1	2	3	4	5	6	7	8	9
		Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Wangroli	Average ..	852	4,373	331	1,313	1,183	5,686	7,318
	1936-37 ..	68	181	..	..	68	181	6,856
Savli	Average ..	1,309	6,682	20	78	1,329	6,760	6,316
	1936-37 ..	188	758	78	297	266	1,055	5,564
Saiat	Average ..	233	1,118	239	963	472	2,080	4,095
	1936-37 ..	142	503	6	25	148	528	3,307
Tranza Nagrama ..	Average ..	76	282	8	32	84	314	2,383
	1936-37 ..	..	..	1	2	1	2	1,935
Futelao	Average ..	15	81	33	101	48	182	1,369
	1936-37 ..	..	..	..	..	..	..	1,277

Wangroli Tank.

The rainfall gauged at the site of the tank was 18·58 inches. The tank was partially filled during the year under report and the water was utilised in irrigating Kharif crops (mainly rice). The miscellaneous revenue realised during the year amounted to Rs. 479 as compared with Rs. 797 received during the previous year.

Savli Tank.

The rainfall gauged at the site of the tank was 19·33 inches during the year. The tank was partly filled and the water was utilised in irrigating the Kharif crops (mainly rice, wheat and gram). The surplus water of the previous year was utilised in irrigating the Hot weather crops, sundhia, etc. The miscellaneous revenue realised during the year amounted to Rs. 452 as compared with Rs. 712 received during the previous year. Remission to the extent of Rs. 2-4-0 was sanctioned during the year.

Saiat Tank.

The rainfall gauged at the site of the tank was 22·19 inches. The tank was partly filled and the water was utilised in irrigating the Kharif and Rabi crops (mainly rice, wheat and gram). The miscellaneous revenue realised during the year amounted to Rs. 458 as compared with Rs. 729 received during the previous year.

Tranza Nagrama Tanks.

The rainfall gauged at the tanks was 18·95 inches. The tanks did not fill during the year and there was no irrigation under them either in the Kharif or the Rabi season. The miscellaneous revenue realised during the year was Rs. 941 as compared with Rs. 1,192 of the previous year.

Futelao Tank.

The rainfall gauged at the site of the tank was 16·17 inches. The tank did not fill at all and consequently there was no irrigation under it in any of the seasons of the year. The miscellaneous revenue realised during the year was Rs. 7 as compared with Rs. 79 of the previous year. The percentage returns obtained during the year from the working of these tanks are shown below :—

Name of Tank.	Gross assessment.	Gross realisation.	*Less* working expenses.	Net revenue.	Capital outlay direct and indirect to end of 1936-37.	Percentage return.
	Rs.	Rs.	Rs.	Rs.	Rs.	
Wangroli Tank ..	660	2,451	6,856	—4,405	2,93,295	—1·5
Savli Tank ..	1,407	1,401	5,564	—4,163	2,55,210	—1·63
Saiat Tank ..	986	1,570	3,307	—1,737	1,84,029	—0·94
Tranza Nagrama Tanks ..	943	977	1,935	— 958	2,80,635	—0·34
Futelao Tank ..	7	23	1,277	—1,254	1,16,461	—1·08

DECCAN IRRIGATION CIRCLE.

The rainfall was below normal in the Nira Right Bank and Left Bank Canal tracts. In the Pravara Canals tract, the rainfall was also very scanty and resulted in scarcity of fodder and drinking water all over the Ahmednagar District. In the Gadavari Canals tract, fodder scarcity was keenly felt with the result that there was an unusually heavy demand for water for fodder crops.

Due to considerable drop in Gul prices, the cultivators were not able to improve their financial condition which continued to be poor during the year under report.

The following seven sugar factories have been established on the Deccan Canals and the acreages for which water is guaranteed at present is noted against each :—

Name of sugar factory.	Annual guarantee of water supply for areas of sugar cane.	Capacity in tons per day.
	Acres.	
1. The Belapur Company, Harigaon, Pravara Left Bank Canal ..	2,750	600
2. The Maharashtra Sugar Mills, Limited, near Belapur, Pravara Left Bank Canal	1,250	500
3. Messrs. Marsland Price and Company, Limited, at Kalamb, Nira Left Bank Canal	1,400	300
4. The Phaltan Sugar Works, Limited, near Tadavali, Nira Right Bank Canal ..	2,500	500
5. The Saswad Mali Sugar Factory, Limited, near Akluj, Nira Right Bank Canal	1,200	300
6. The Ravalgaon Sugar Farm, Limited, near Ravalgaon, Girna Canal ..	1,400	200
7. Belwandi Sugar Farm, near Visapur, Visapur Canal	No guarantee in respect of area is given but $\frac{3}{4}$th of the water available in the Visapur tank is guaranteed annually.	

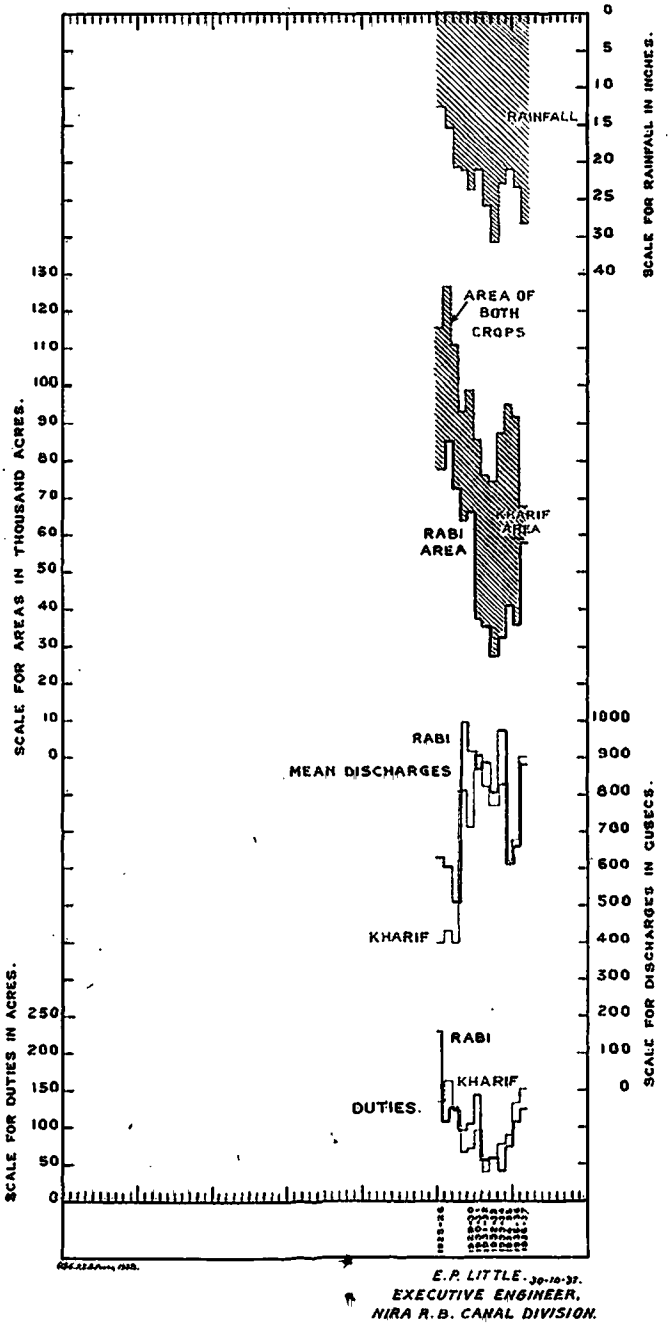
No factory has yet been erected by the Brihan Maharashtra Sugar Syndicate Limited, Nira Right Bank Canal, but sugarcane has been planted by the Company for the purpose of seedling cane.

The area of sugarcane planted by these sugar factories during the year was 11,017 acres.

Due to intensive cultivation of sugarcane by the sugar companies, low lying lands are being damaged rapidly by waterlogging and construction of adequate drainage schemes has also been taken up in some cases.

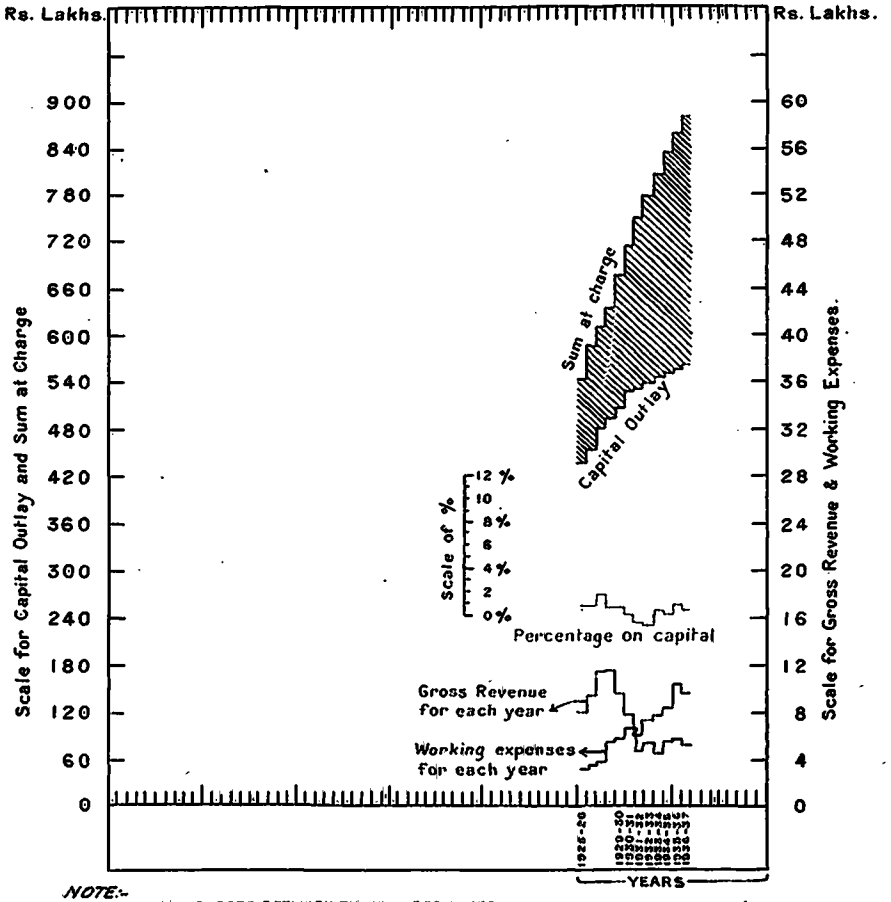
The total area irrigated in the Deccan Irrigation Circle during the year was 271,388 acres as compared with 167,209 acres during the previous year and the gross revenue amounted to Rs. 30·20 lakhs as compared with Rs. 23·60 lakhs of the last year.

WORKING RECORD
FOR
NIRA RIGHT & LEFT BANK CANALS
1925 - 1937


RAINFALL
AREA OF BOTH CROPS
RABI AREA
KHARIF AREA
RABI
MEAN DISCHARGES
KHARIF
RABI
KHARIF
DUTIES.
SCALE FOR AREAS IN THOUSAND ACRES.
SCALE FOR RAINFALL IN INCHES.
SCALE FOR DISCHARGES IN CUSECS.
SCALE FOR DUTIES IN ACRES.
0 5 10 15 20 25 30 40
130 120 110 100 90 80 70 60 50 40 30 20 10 0
1000 900 800 700 600 500 400 300 200 100 0
250 200 150 100 50 0

E.P. LITTLE. 30-10-37.
EXECUTIVE ENGINEER,
NIRA R.B. CANAL DIVISION.

FINANCIAL RECORD
FOR
Nira Right & Left Bank Canals.
1925-1937.



NOTE:- THE INTERCEPTS BETWEEN THE TWO RED LINES SHOW ARREARS OF INTEREST UNPAID UP TO END OF EACH YEAR, WHICH BEING ADDED TO THE CAPITAL, GIVE SUM AT CHARGE. THE INTERCEPTS BETWEEN THE BLACK & RED LINES SHOW THE NET INCOME EACH YEAR.

E. P. LITTLE 30-10-37
EXECUTIVE ENGINEER
NIRA R.B. CANAL DIVISION.

(O) G.P.Z.O. POONA, 1938

NIRA RIGHT BANK CANAL DIVISION.

LLOYD DAM AT BHATGAR AND NIRA RIGHT BANK CANAL.

The Nira Right Bank Canal is the largest canal in the Deccan. The original estimate of the Project framed in 1910 provided for :—

(1) The raising of the dam at Bhatgar by 60 feet so as to increase its storage capacity from 5,300 million cubic feet to 24,000 million cubic feet.

(2) The construction of a canal, 109 miles long on the right bank of the Nira river, having a capacity of 1,500 cusecs at head ; and

(3) The enlarging of the existing Nira Left Bank Canal in order to increase its discharge from 450 to 760 cusecs.

The total cost was estimated at about Rs. 258 lakhs and the area to be irrigated annually at 190,000 acres. The project was submitted to the Government of India in May 1911, sanctioned by the Secretary of State in June 1912 and the work was started in the same year. Before the work of raising the Bhatgar Dam was commenced, however, it was decided for technical reasons to build an entirely new dam. Owing to this change and to the unprecedented rise in the cost of labour and materials due to the Great War, a revised estimate amounting to Rs. 491 lakhs was framed in 1920 and submitted to the Government of India in September 1921. The revised project provided for :—

(1) The construction of a new dam at Bhatgar designed to increase the storage from 5,300 million cubic feet to 24,000 million cubic feet.

(2) The construction of a canal 106½ miles long on the right bank of the Nira river.

(3) The enlargement of the Nira Left Bank Canal, including the expenditure of Rs. 3¾ lakhs already incurred on widening the Nira Left Bank Canal.

It was anticipated that 1,32,000 acres would be irrigated annually as a result of this scheme and that the gross revenue would amount to Rs. 15·22 lakhs and the net revenue to Rs. 11·92 lakhs, yielding a return of 2·4 per cent. on the capital outlay. The revised project was sanctioned by the Secretary of State in June 1922.

The Lloyd Dam at Bhatgar, 190 feet high, 5,333 feet long including the waste weir (4,266 feet long excluding the waste weir) and 124 feet wide at the base, was completed in 1928 at a cost of Rs. 172 lakhs. It is one of the largest dams in the world and contains 21½ million cubic feet of masonry. The lake formed by the construction of the dam has a length of 17 miles at full supply level with a corresponding storage capacity of 24,000 million cubic feet. The catchment area is 128 square miles in extent with an annual rainfall varying from 250 inches in the Ghats to 40 inches at Bhatgar. In addition to the sluices required for releasing water for irrigation purposes there are 81 waste weir gates for the control and regulation of the flood level in the lake.

The Nira Right Bank Canal has its head works at Vir, 17 miles from the Lloyd Dam. The designed discharges of the canal at head and at tail are 1,500 and 414 cusecs, respectively, the corresponding full supply depths being 8·5 and 6·5 feet, respectively. The canal about 106½ miles in length commands lands situated in the Satara and Sholapur Districts and in the Phaltan State. Water was first supplied from the canal for the irrigation of rabi crops in 1924–25. The works on the main canal are completed. There are 3 branches and 69 distributaries taking off from the canal, while the culturable area commanded by it is 448,000 acres. The water regulation and distribution works on the canal are constructed on modern lines and the latest types of Standing Wave Flum measuring devices are provided at distributary heads of the channels. The whole of the perennial area commanded by the canal has been surveyed and the soil classification carried out before designing the channels, while the lands suitable for perennial and other crops have been classified by the Irrigation Research Division and shown on maps.

On the 1st April, the depth of water in Lake Whiting at Bhatgar was 111·30 feet (full supply level 143 feet) above the sill of the sluices, the corresponding contents being 12,971·05 million cubic feet. The lowest level of 86 feet was reached on the 22nd June, the corresponding contents being 6,053·42 million cubic feet. The lake began to fill subsequently and received replenishment up to its full supply level of 143 feet on the 1st September. The full supply level was maintained till the 25th September, when the draw off for irrigation purposes commenced. On the 31st March, the water level was 101·30 feet, the corresponding contents being 10,023·31 million cubic feet. The rainfall gauged at Bhatgar during the year was 34·33 inches, while the rainfall in the canal tract averaged 14·32 inches.

The following table gives the area irrigated, the revenue assessed, etc., during the year as compared with the corresponding averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
50,634	30,273	4,28,373	2,45,642	4,41,827	2,56,759

Working expenses.		Realisations.		Rainfall.	
1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
3,58,490	3,27,676	2,71,215	2,20,957	14·32	23·72

The increase in the area irrigated and the revenue assessed was due to an increased demand of water on account of scarcity of rain during the year under report. The area under sugarcane was 8,400 acres as compared with 5,683 acres in the previous year. The acreas under sugarcane blocks and two-seasonal blocks were 2,402 acres and 8,848 acres as compared with 3,510 acres and 11,431 acres, respectively, in the previous year. The areas of garden and fruit blocks totalled 106 acres as compared with 126 acres of the previous year. The remissions sanctioned during the year amounted to Rs. 146.

The cost of the measuring establishment during the year was 3 pies per acre—the same as last year. The expenditure incurred on maintenance and repairs amounted to Rs. 1,32,976. The perennial section of the Nira Right Bank Canal extended up to mile 79.

Mhaswad Tank.

This irrigation tank is formed by an earthen dam built across the Man river, the dam being 9,000 feet long and 80 feet high at its highest point. The tank, which is situated on the eastern border of the Satara District, has a storage capacity of 2,602 million cubic feet and supplies water for the irrigation of lands situated in the Sholapur District. Owing to the precarious nature of the rainfall received in the catchment area the supply is not reliable. The tank is provided with a masonry over-flow waste weir. The project was commenced in 1876–77 and completed in 1888–89. There is only one canal taking off from the left flank of the dam, previously called Mhaswad canal No. 1 and now termed Mhaswad Canal, Part I. The designed discharge of the canal is 180·7 cusecs, whereas the present actual discharge is about 110 cusecs with the full supply depth of 4 feet. The Nira Right Bank Canal cuts across the Mhaswad Canal at mile 15 and the old Mhaswad Canal has been remodelled to function as Branch III of the Nira Right Bank Canal passing a discharge of 300 cusecs. No water from the Nira Right Bank Canal is now available for Branch III of the Nira Right Bank Canal system and the irrigation on this branch is being carried out with water obtained from the Mhaswad Tank with effect from the rabi season of 1934–35.

On the 1st April, the level of water in the tank was 18·60 feet (the full supply depth being 24 feet) and the corresponding contents were 1,741·39 million cubic feet. The lowest depth to which the water level fell was 4·60 feet on the 16th September when the tank began to receive replenishment and reached its full supply level on 20th November. On the 31st March, the level of water in the tank was 19·80 feet, the corresponding contents being 1,918·13 million cubic feet. The average rainfall in the catchment of the tank (480 square miles) was 13·4 inches and the run-off amounted to 14,966 million cubic feet. The average rainfall in the canal tract was 12·39 inches.

The following table shows the area irrigated, the revenue assessed, etc., during the year as compared with the corresponding averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
4,504	3,254	22,641	15,485	25,565	19,128

Working expenses.		Realisations.		Rainfall.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
13,996	19,007	20,909	32,802	12·39	24·25

The area cultivated under sugarcane was 110 acres as compared with 62 acres in the previous year. The area under two seasonal blocks was 51 acres. The cost of the measuring establishment was 3 pies per acre, the same as in the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 5,855.

POONA IRRIGATION DIVISION.

Nira Left Bank Canal.

This canal forms part of the scheme known as the Nira Valley Development Project and irrigates lands situated on the left bank of the Nira river. It is one of the pioneer irrigation works in the Deccan and protects a tract in the Poona District which has a very precarious rainfall. The original scheme consisted of :—

(*a*) A ghat-fed storage tank at Bhatgar (Lake Whiting), about 32 miles south of Poona on the Yelwandi river, impounding 5,300 million cubic feet of water ;

(*b*) A pick-up-weir at Vir on the Nira river about 17 miles down stream from Bhatgar ;

(*c*) A canal about 100 miles long irrigating about 80,000 acres annually ;

(*d*) The Shetphal Tank at the tail of the canal with an effective capacity of 592 million cubic feet for the purpose of storing a portion of the surplus monsoon discharge.

The original masonry dam at Bhatgar, 127 feet high, has since been replaced by the higher Lloyd Dam which stores 24,000 million cubic feet. The original works were commenced in 1881 and the canal came into operation in 1885-86. The canal originally had a capacity of 456 cusecs but it has now been remodelled to carry a discharge of 720 cusecs.

The canal commands a gross area of 201,000 acres, while the area commanded by the Shetphal Tank itself is 23,500 acres. This scheme is the most remunerative of the large protective works in the Deccan.

Nira Valley Development Project.

This project was designed for the complete development of irrigation in the Nira Valley. It provided, " inter alia ", for the widening and remodelling of the Nira Left Bank Canal in order that the canal could irrigate an additional area of 19,000 acres of various types of crops and the construction of a new dam at Vir, designed to supplement the storage of 24,000 million cubic feet impounded by the Lloyd Dam at Bhatgar. The construction of the Vir Dam, estimated to cost about a crore of rupees, which was abandoned on the assumption that by economical distribution of the water available, the storage at Bhatgar would be sufficient to meet all irrigation requirements of the Nira Valley, will have to be reconsidered owing to the development of irrigation by the opening of sugar factories in the Valley. The remodelling of the Nira Left Bank Canal, which was started in the year 1925–26, has made considerable progress and the work is expected to be completed by the end of the year 1941–42. The expenditure incurred during the year amounted to Rs. 99,839.

The rainfall at Bhatgar was 34·33 inches as compared with 44·06 inches, the average rainfall of the past 35 years. The rainfall along the Nira Left Bank Canal was 13·67 inches as compared with 21·46 inches, the average of the past 3 years. The water in the Setphal Tank reached its lowest depth of 12·50 feet on the 23rd July, the corresponding contents being 56·35 million cubic feet. The tank reached the full supply level of 37·50 feet on the 13th October, the corresponding contents being 572·53 million cubic feet.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the previous three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
75,690	57,418	7,73,360	6,00,733	7,84,015	6,07,230

Working expenses.		Realisations.		Rainfall.	
1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
2,06,510	2,07,143	7,06,090	6,73,729	13·67	21·46

The increase in the area irrigated and the revenue assessed was due to the general development of irrigation. The area of sugarcane blocks was 17,214 acres on the Nira Left Bank Canal and that on the Shetphal Tank was 1,774 acres as compared with 16,400 and 1,792 acres, respectively, during the previous year, while the area under two-seasonal blocks on the Nira Left Bank Canal was 19,996 acres and on the Shetphal Tank was 1,285 acres as compared with 17,216 and 636 acres, respectively. The cost incurred on the measuring establishment was 5 pies per acre, the same figure as for last year. Remissions amounting to Rs. 1,701 were sanctioned during the year under report. The cost of maintenance and repairs amounted to Rs. 74,071. The perennial section of the Nira Left Bank Canal was limited up to mile 75 and that of the Shetphal Tank up to mile 10 of Shetphal Channel.

Mutha Canals.

This system came into operation in 1874–75. The canals were constructed at a cost of about Rs. 65½ lakhs, including the cost of a large ghat-fed storage reservoir (Lake Fife) on the Mutha river at Khadakwasla about 12 miles from Poona. The dam is 107 feet high, spanning the valley of the Mutha. The system comprises two canal, the Mutha Right Bank and Mutha Left Bank, 70 and 18 miles long, respectively. The maximum designed discharge of the two canals at their heads are 412 and 38·5 cusecs, respectively. Both the canals take off direct from the lake, which has a storage capacity of 3,955 million cubic feet, of which 508 million cubic feet are reserved for the Poona Water Supply system as a margin of safety in the event of replenishment being received late. The storage is partly utilised for drinking and domestic purposes in Poona and partly for irrigation. The supply available for irrigation being insufficient the perennial limit of the Mutha Right Bank Canal is restricted to the reach between the head of the canal and mile No. 23 5/8 i.e. up to and including Distributary No. 9. The supply available in the lake is however insufficient to meet the increasing demands on it and the necessity for increasing the storage is therefore keenly felt.

On the 1st April, the level of water in Lake Fife was 19·40 feet above the sill of the canal sluices, the corresponding contents being 1,601·40 million cubic feet as compared with 21·20 feet and 1,804·40 million cubic feet of the previous year. The lowest level reached was 8·65 feet on the 15th of June, when replenishment commenced and the lake overflowed on the 26th June. The draw off commenced from the 7th October. The run-off from the catchment of the lake (196 square miles) amounted to 36,155·26 million cubic feet. The level of water on the 31st March was 17·15 feet, the corresponding contents being 1,366·45 million cubic feet as compared with 19·50 feet and 1,612·50 million cubic feet, respectively, during the previous year. The rainfall at Khadakwasla was 21·77 inches as compared with 28·65 inches during the previous year. The level of water in the Matoba Tank on the 15th February was 18·95 feet, the corresponding contents being 69·95 million

cubic feet. The tank dried up on the 16th April. Replenishment from the Mutha Right Bank Canal commenced from the 30th June but there was a break in the replenishment and the tank dried up on the 18th July. Regular replenishment from the canal, however, commenced on the 24th July. The full supply level of the tank (29 feet) was reached on the 5th October, the corresponding contents being 220·54 million cubic feet.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
17,082	11,210	1,96,091	1,64,338	4,20,865	3,57,871

Working expenses.		Realisations.		Rainfall.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
91,244	1,11,350	4,12,954	4,21,180	13·45	20·93

The sugarcane area including overlap was 3,844 acres as compared with 3,502 acres of the previous year. The area under two-seasonal blocks on the Mutha Canals was 1,648 acres and that on the Matoba Tank was 1,634 acres as compared with 1,044 and 1,321 acres, respectively, in the previous year. The area of fruit blocks was 780 acres as compared with 809 acres in the previous year. The quantities of water supplied to the Poona Cantonment and the Poona City Municipality during the year were 1,258 and 3,109 million gallons, respectively, as compared with 1,162 and 3,022 million gallons, respectively, in the previous year. The revenue assessed amounted to Rs. 51,008 and Rs. 1,52,026 as compared with Rs. 46,494 and Rs. 1,42,477, respectively, during the previous year. The cost incurred on the measuring establishment amounted to 13 pies per acre as compared with 9 pies in the last year. The expenditure incurred on maintenance and repairs amounted to Rs. 36,513. The remission sanctioned during the year amounted to Rs. 79.

Kasurdi Tank.

This tank which dried up on the 30th October 1935 received its first replenishment on the 22nd September 1936. It however dried up again on the 19th October. The second replenishment was received on the

10th November and the tank dried up finally on the 6th December. The tank, being heavily silted, irrigated a very small area. The leasing out of the tank bed for cultivation is the main source of revenue and fetched Rs. 1,033 during the year under report.

Shirsuphal Tank.

The level of water in the tank on the 15th February 1936 was 24·50 feet, the corresponding contents excluding silt—were 171 million cubic feet. The highest level reached was 17·10 feet on the 11th October, the corresponding contents being 50 million cubic feet. The depth of the tank is 31 feet, of which silt depth is 9·25 feet. The tank did not fill to its full supply level during the year. The supply available was fully utilised for irrigation purposes.

Bhadalwadi Tank.

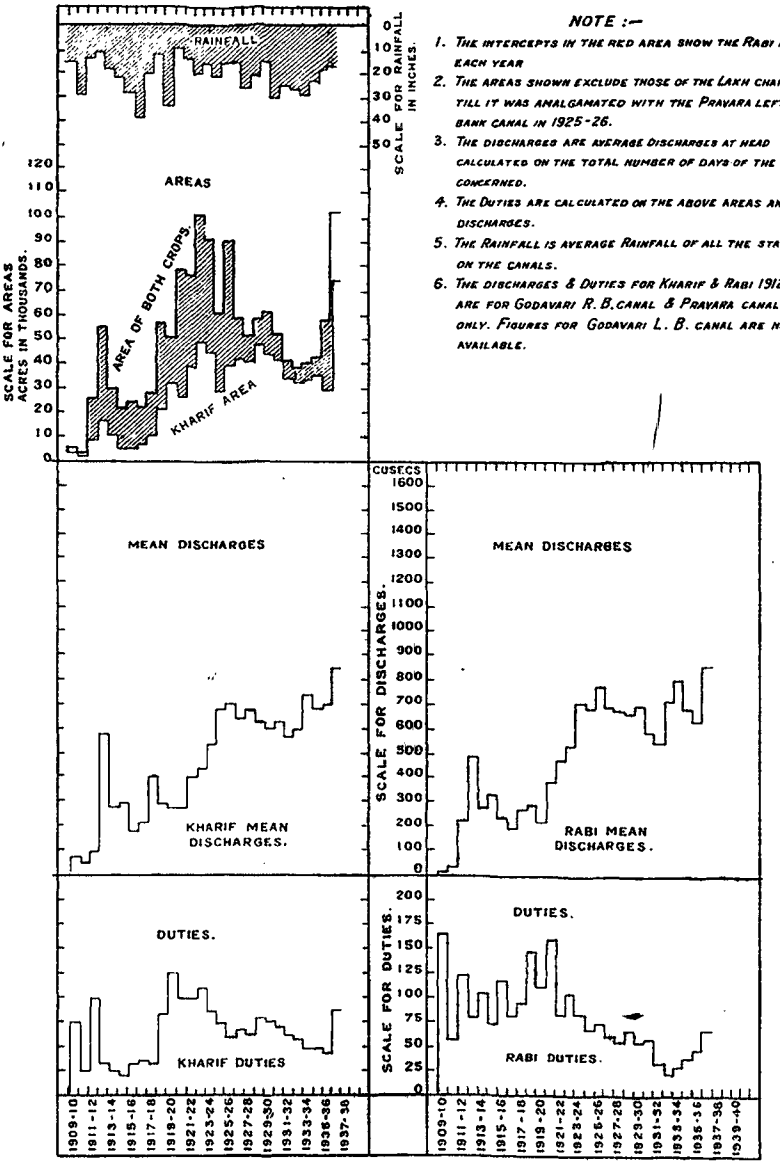
The level of water in the tank on the 15th February was 32·30 feet, the contents being 153 million cubic feet. The lowest level of 21·90 feet was recorded on the 21st September, the corresponding contents being 43·76 million cubic feet. The full supply level of 35·70 feet was reached on the 28th September, the corresponding contents being 109·73 million cubic feet. The full supply depth of the tank is 35·70 feet, out of which the depth of silt is 20 feet.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of tank.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Kasurdi	19	42	50	193	1,102	1,003
Shirsuphal	997	1,029	5,614	5,797	5,998	6,033
Bhadalwadi	1,198	745	6,527	3,985	6,543	4,042

Name of tank.	Working expenses.		Realisations.		Rainfall.	
	1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Kasurdi	951	1,160	1,117	1,044	8·10	14·48
Shirsuphal	2,715	3,118	5,236	7,606	11·74	18·38
Bhadalwadi	3,057	3,265	4,917	6,501	16·45	23·31

AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED WORKING RECORD.
FOR THE YEARS 1910-37



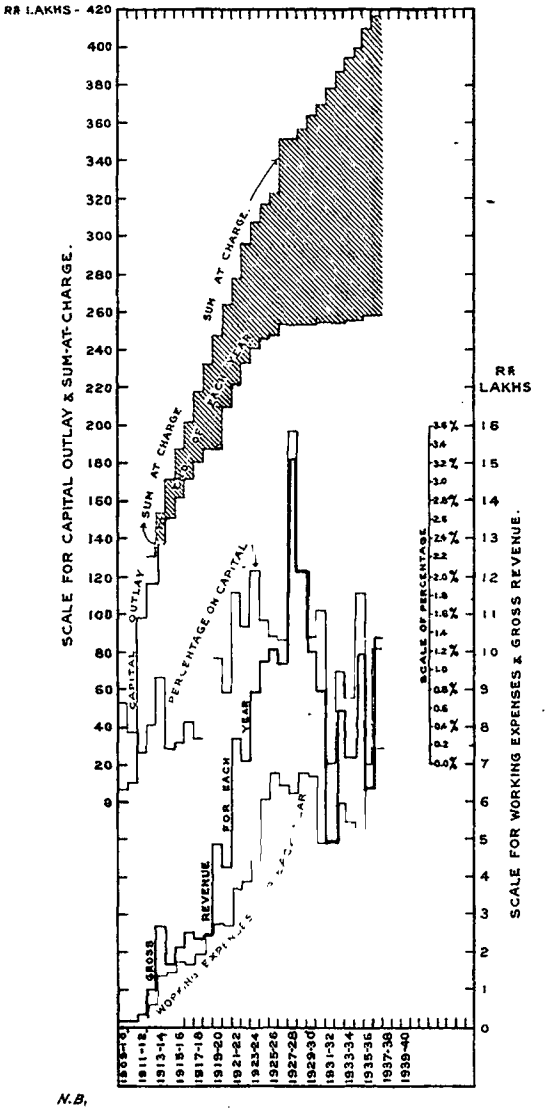
NOTE :—

1. The intercepts in the red area show the Rabi areas each year
2. The areas shown exclude those of the Lakh channel till it was amalgamated with the Pravara left bank canal in 1925-26.
3. The discharges are average discharges at head calculated on the total number of days of the season concerned.
4. The Duties are calculated on the above areas and discharges.
5. The Rainfall is average Rainfall of all the stations on the canals.
6. The discharges & Duties for Kharif & Rabi 1912-13 are for Godavari R. B. canal & Pravara canals only. Figures for Godavari L. B. canal are not available.

© E.E.D. Poona, 1938.

N. B. GADRE 29-11-37
Executive Engineer,
Ahmednagar Division.

AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED FINANCIAL RECORD.
FOR THE YEARS 1910 – 37.



N.B,

THE INTERCEPTS BETWEEN THE TWO RED LINES SHOW ARREARS OF INTEREST UNPAID UPTO END OF EACH YEAR, WHICH BEING ADDED TO THE CAPITAL, GIVE SUM AT CHARGE. THE INTERCEPTS BETWEEN THE GREEN & BLACK LINES SHOW THE NET INCOME EACH YEAR.

NAME OF CANAL	CONSTRUCTION COMMENCED IN.	CANAL WAS OPENED IN.
GODAVARI CANALS.	1907	1911 – 12
PRAVARA CANALS.	1909	1909–10

N.B. GADRE.
29-11-37
EXECUTIVE ENGINEER.
AHMEDNAGAR DIVISION

NASIK IRRIGATION DIVISION.

GODAVARI CANALS.

This is one of the major irrigation works undertaken in the Deccan for the protection of the areas liable to famine. It was started in 1907 and completed in 1915–16 at a cost of about 1 crore of rupees. The system comprises of—

(1) A storage reservoir (Lake Beale) on the Darna River, a tributary of the Godavari situated about 20 miles from Nasik.

(2) A pick-up-weir at Nandur-Madhmeshwar on the Godavari, 47 miles below the Darna Dam which impounds the water released from the storage reservoir.

(3) Two canals, the Right Bank Canal, 69 miles long, which serves the northern tracts of the Ahmednagar District, and the Left Bank Canal, 48 miles long, which irrigates lands north of the Godavari valley in the Nasik and Ahmednagar Districts.

The length of the Darna Dam (inclusive of its waste weir) exceeds a mile and the dam has a maximum height of 92 feet above its lowest foundation level. The lake has a storage capacity of 7,763 million cubic feet and the cost of the dam was Rs. 34·27 lakhs. The catchment area is 156 square miles. The weir at Nandur-Madhmeshwar is a work of considerable magnitude, its length being 3,618 feet inclusive of the Right and Left Bank Canal regulators. It has a maximum height of 34 feet above the level of the river bed. Scouring sluices have been constructed close to the head regulators of the two canals with the object of keeping the approach channels to the latter clear of silt. The total area under the command of the canals is 232,390 acres. The two canals (Right Bank and Left Bank) are designed to discharge 384 and 228 cusecs at their heads, respectively, with full supply depths of 7 feet and 6 feet, respectively.

On the 1st April, the level of water in the lake was 48 feet, the corresponding contents being 3,266 million cubic feet. The lowest level of 1 foot was reached on the 16th June. The lake began to get replenishment from the 23rd June until it overflowed on the 15th July. The draw-off for irrigation purposes commenced on the 21st October with a water level of 64·80 feet the corresponding contents being 7,694 million cubic feet. On the 31st March 1937, the level of water was 51·90 feet, the corresponding contents being 4,056 million cubic feet. The perennial limit of the Right Bank Canal is up to mile 60 and that of the Left Bank Canal up to 42 miles. The average rainfall in the catchment area of the lake was 75·65 inches.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Lake Beale	497	525	1,745	1,800	4,97,642	2,61,759
Godavari Right Bank Canal	29,855	8,868	2,82,473	1,22,436		
Godavari Left Bank Canal	19,931	7,498	1,86,804	1,12,345		

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Lake Beale	3,32,234	3,21,043	4,28,680	3,27,755	..	..
Godavari Right Bank Canal					18·31	23·34
Godavari Left Bank Canal.					16·03	22·57

The area of sugarcane blocks was 15,330 acres as compared with 9,515 acres of the previous year. The areas of two seasonal blocks and fruit blocks were 3,359 and 567 acres, respectively. The cost of the measuring establishment was 6 pies per acre as compared with 7 pies of the last year. The remissions sanctioned during the year amounted to Rs. 9,329. The cost incurred on maintenance and repairs amounted to Rs. 1,33,087.

Chankapur Tank—Girna Canal.

This is a comparatively small irrigation system situated in the Nasik District having a storage reservoir at Chankapur with a catchment of 100 square miles in extent and a pick-up-weir at Tengoda situated further downstream on the Girna River, from which weir the Girna Canal (19 miles in length) takes off. The tank is situated on the Girna River, a tributary of the Tapti, and has been formed by the construction of a masonry dam 140 feet high, which impounds 1,500 million cubic feet of water. The dam and the canal (up to mile 13) were completed in 1909–10 and the canal has been in operation since then. The extension

Lining of Malegaon Cut View showing Brick Lining with Canal Dry.

Date of photo	... May 1937
Date of commencement of work	... May 1928
Estimated cost... ...	... Rs. 48,881
Total expenditure to end of 1936-37	... Rs. 41,032
Work in progress	

of this canal designed to carry about 40 cusecs up to mile 19 was completed in 1920–21. The designed discharge of the canal at its head is 90 cusecs and at its tail 15 cusecs, the corresponding full supply depth being 4½ feet and 2 feet, respectively. The total area under the command of the canal is 29,182 acres and the irrigable area is 8,500 acres.

On 1st April, the level of water in the tank was 77·65 feet, the corresponding contents being 852 million cubic feet. The lowest level of 45·10 feet was reached on the 26th June, the contents being 221 million cubic feet, when the lake began to receive replenishment, until the level rose to 91·6 feet on the 13th October (the full supply depth being 92 feet), the corresponding contents being 1,522 million cubic feet. The first draw off for irrigation purposes commenced on the 13th October with the level of water at 90·60 feet, the corresponding contents being 1,460 million cubic feet. On the 31st March 1937, the level of water was 76·30 feet, the contents being 804 million cubic feet.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
12,437	7,519	1,25,163	79,092	1,26,825	80,076

Working expenses.		Realisations.		Rainfall.	
1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
51,087	50,296	90,592	81,338	22·18	22·20

The increases in the area irrigated and the revenue assessed were due to the increase in the area under fodder crops and irrigation under pazars. The cane area was 2,000 acres as compared with 1,694 acres in the previous year. The cost of the measuring establishment was equivalent to 1 anna 2 pies per acre as compared with one anna 6 pies of the last year. The remissions sanctioned during the year amounted to Rs. 68. The expenditure incurred on maintenance and repairs amounted to Rs. 20,035.

Kadwa River Works.

These works, which came into operation in 1868–69, consist of three small canals, viz. the Palkhed, Ojhar Tambat and the Wadali, taking off from weirs constructed across the Kadwa River and its tributary the Banganga. The system comprises 38 miles of canals and distributaries.

The storage reservoir is at Waghad (a ghat-fed storage) situated on the Kolwan River in the Nasik District. The catchment of the tank is 29 square miles. The tank is remarkable for the size of its earthen dam, which has a maximum height of 96 feet. The designed discharges of the Palkhed Canal at its head and at its tail are 90 cusecs and 15 cusecs, respectively, the corresponding depths at full supply being 4½ feet and 2 feet. The designed discharges of Ojhar Tambat Canal at its head and at its tail are 33 cusecs and 5 cusecs, respectively, the depths at full supply being 3 feet and 1 foot, respectively. The designed discharges of the Wadali Canal at its head and at its tail are 19 cusecs and 5 cusecs, respectively, the depths at full supply being 2 feet and 1 foot, respectively.

On the 1st April 1936, the level of water in the tank was 37·90 feet above the sill, the corresponding contents being 253 million cubic feet. On 26th June, the level of water fell to 24·50 feet, the corresponding contents being 43·35 million cubic feet. The lake began to receive replenishment on 27th June and on 22nd August the level of water rose to full supply depth of 48 feet, the corresponding contents being 521 million cubic feet. The first draw-off for irrigation purposes commenced on the 1st November, when the level of the tank was 47·90 feet, the corresponding contents being 518 million cubic feet. On the 31st March 1937, the level of water was 40·05 feet, the corresponding contents being 299 million cubic feet.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of Canal.	Area irrigated.		Water rates assessed.		Gross revenue assessed.	
	1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Palkhed Canal ..	1,926	2,153	17,542	17,239	39,244	38,471
Ojhar Tambat Canal ..	1,024	1,059	10,647	9,527		
Wadali Canal ..	818	929	9,570	8,735		

Name of Canal.	Working expenses.		Realisations.		Rainfall.	
	1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Palkhed Canal ..	29,673	28,358	23,770	20,832	26·40	28·67
Ojhar Tambat Canal ..					22·26	29·38
Wadali Canal ..					25·10	21·94

The cost incurred on maintenance and repairs on these works during the year amounted to Rs. 11,691. The cost of the measuring establishment was 6 pies per acre the same figure as in the last year.

Parsul Tank.

This tank is formed by an earthen dam across the Parsul river in the Malegaon Taluka of the Nasik District. It depends solely on local rains for its supply. The storage capacity of the tank is 119 million cubic feet, with a depth of 35 feet. There is no canal and the irrigation is done by small channels taking off the Parsul river itself downstream of the tank.

The tank was dry from the 1st April to the 6th September when the replenishment commenced. The level of water rose to 19·10 feet on the 30th September, the corresponding contents being 36·34 million cubic feet. The tank became dry again on the 4th November. On 10th November, replenishment was received and the level rose to 35·30 feet when the waste weir began to overflow. On 31st March 1937, the level of water in the tank was 25·2 feet, the corresponding contents being 65·5 million cubic feet.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
973	565	3,699	3,205	3,759	3,449

Working expenses.		Realisations.		Rainfall.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,767	1,558	1,805	3,719	14·36	18·40

The cost of the measuring establishment employed was equivalent to 1 anna 1 pie per acre as compared with 1 anna 5 pies per acre in the last year. An expenditure of Rs. 796 was incurred on maintenance and repairs during the year.

AHMEDNAGAR DIVISION.

PRAVARA RIVER WORKS.

This canal system, which was constructed at a cost of Rs. 1½ crores, comprises :—

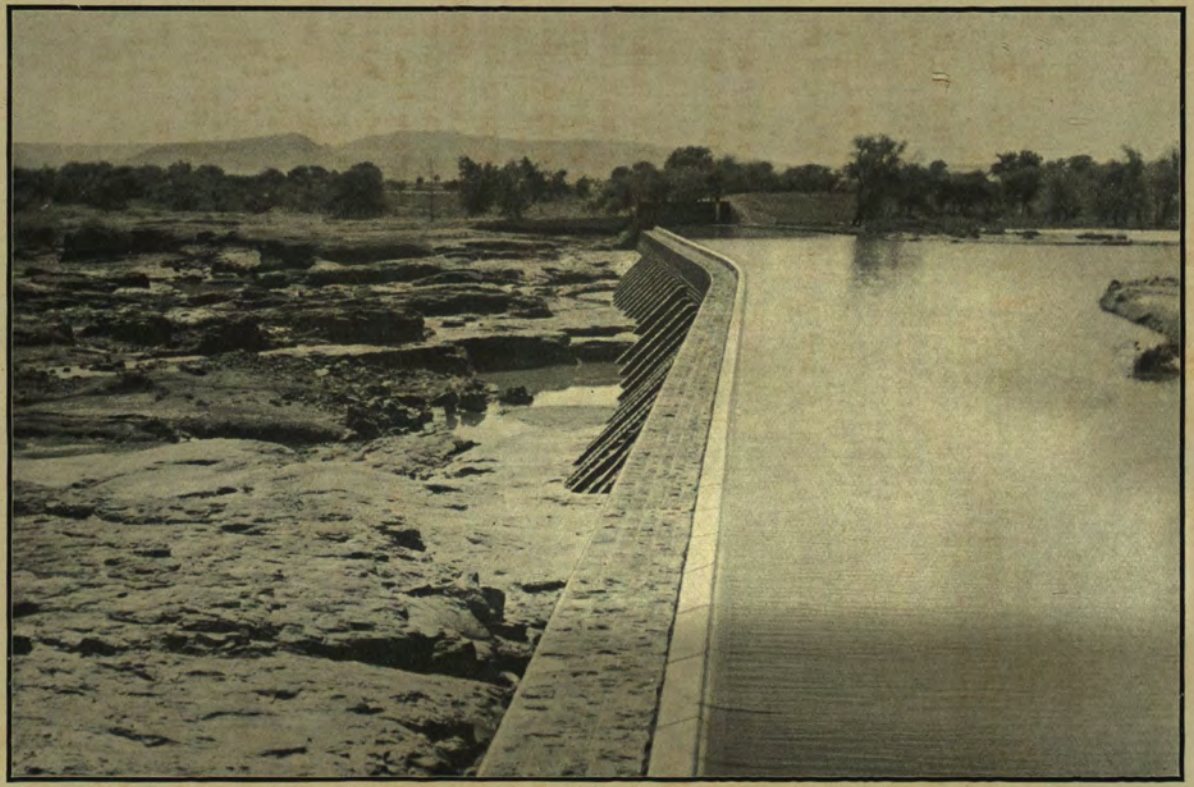
(1) The Wilson Dam at Bhandardara on the Pravara river. This dam which impounds the water of the Lake Arthur Hill, is one of the highest dams in the world, having a height of 282 feet. It is 1,600 feet in length and the lake formed by the dam has a storage capacity of some 12,092 million cubic feet ;

(2) A pick-up-weir, 890 feet long, situated at Ojhar, 53 miles downstream from Lake Arthur Hill and about 8 miles east of Sangamner ;

(3) Two canals, the Pravara Right Bank Canal, 33 miles long and the Pravara Left Bank Canal, 48 miles long, which take off at the weir at Ojhar.

These canals irrigate lands in the Ahmednagar District and command an area of 2,28,720 acres. The designed discharges of the two canals (Pravara Right Bank Canal and Pravara Left Bank Canal) at head are 152 and 530 cusecs, respectively, the corresponding full supply depths being 5 feet and 8 feet. To meet the increased demand for water from the sugar factories established on the Left Bank Canal, the canal had to be remodelled and this work as well as the work of remodelling the Northern Branch which was started last year was in progress during the year under report. The work of remodelling Distributary Nos. 6 and 7 of the Canal which was in progress last year was completed. With the remodelling of the canal and the rotational running now practised it is expected that the trouble caused by weeds will not recur. The Ojhar weir has been raised by two feet for additional storage. The construction of the Wilson Dam, which impounds the water of Lake Arthur Hill, was commenced in 1911 and completed in 1926. The catchment area of the lake is 47 square miles ; it is situated in the ghats and has an assured run-off. The dam is designed to impound a maximum depth of 270 feet and is constructed across a gorge in the valley of the Pravara river. At present water is impounded to a depth of 260 feet giving a storage of 10,086 million cubic feet and this could be increased to 12,092 million cubic feet with a corresponding depth of 270 feet by the erection of automatic gates on the waste weir or by the construction of siphon spillways and the raising of the waste weir.

On the 1st April, the level of water in the lake was 226·0 feet, the corresponding contents being 5,359 million cubic feet. The level of water went down to 185·2 feet on the 23rd June, the contents being 2,340 million cubic feet. Replenishment commenced from the 24th June and the full supply level of 260 feet was reached on the 29th July,



View of Ojhar Weir showing part of its crest raised by 2 feet with cement concrete coping

Date of photo	... 19th May 1937
Date of commencement of work ...	... May 1936
Estimated cost	... Rupees 3008
Total expenditure to end of 1936-37 ...	... Rupees 2,987

Work completed

the contents being 10,080 million cubic feet. The maximum flood occurred on the 9th September when the level was 263 feet, which lasted for about 12 hours. The full supply level was maintained till the 7th October and the draw off for irrigation purposes commenced on this date. The level of water gradually fell to 231·6 feet on the 15th February 1937, the contents being 5,971 million cubic feet. The level of water on the 31st March 1937, was 217·5 feet, the corresponding contents being 4,532 million cubic feet. The yield from the catchment (47 square miles) of the lake was 34,884·22 million cubic feet while the average rainfall in the catchment was 140·40 inches.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Pravara Right Bank Canal.	13,280	5,791	1,53,028	79,805	6,62,069	4,50,851
Pravara Left Bank Canal ..	39,847	19,858	4,99,404	3,64,382		

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1936–37	Average.	1936–37.	Average.	1936–37.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Pravara Right Bank Canal..	4,03,895	2,41,618	6,19,528	4,52,411	16·95	24·61
Pravara Left Bank Canal ..					15·85	23·76

The increases in the area irrigated and the irrigation assessment during the year were due to heavy demand for monsoon and fodder crops. The total area of sugarcane blocks was 9,535 acres while the area under two-seasonal blocks was 727 acres as compared with 8,653 acres and 665 acres, respectively, in the previous year. The remissions sanctioned during the year amounted to Rs. 680. The cost of the measuring establishment employed was equivalent to 5 pies per acre as in the previous year. The expenditure incurred on maintenance and repairs to the Wilson Dam and the two canals amounted to Rs. 81,498.

Bhatodi Tank.

This is a small tank situated on the Mehekri river about 12 miles from Ahmednagar. It depends entirely on local rains for its supply. Due to silting the storage capacity of the tank has been reduced from 154 million cubic feet to about 40 million cubic feet. On the 1st April, the level of water in the tank was 16·20 feet, the contents being 17 million cubic feet. The first replenishment was received on the 21st May which raised the level of water to 19·50 feet. The tank went dry on the 27th August. Fresh replenishment was received on the 23rd September and the tank over-flowed on the 18th November.

The following table gives the figures of the area irrigated, the revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
676	638	3,649	3,308	4,905	4,586

Working expenses.		Realisations.		Rainfall.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
2,092	3,187	6,061	5,809	11·30	27·98

The increases in the area irrigated and the assessment were due to more demand for irrigation. The area of two seasonal blocks was 442 acres as compared with 443 acres of last year. The expenditure incurred on maintenance and repairs during the year amounted to Rs. 897.

CENTRAL CIRCLE.

SATARA DIVISION.

The area irrigated, the gross assessed revenue and the working expenses of the six works mentioned below as compared with

the averages of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed Revenue.		Working expenses.	
	1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
(1) Krishna Canal ..	3,647	4,197	57,635	67,934	21,964	21,472
(2) Rewari Canal ..	566	472	3,713	3,037	2,150	4,041
(3) Upper Man River Works ..	849	831	5,198	4,358	15,512	5,797
(4) Yerla River Irrigation Works ..	4,379	2,435	26,343	14,703	11,784	10,592
(5) Chikhli Canal ..	353	294	2,641	2,956	1,489	1,423
(6) Maini Tank ..	893	1,494	5,000	7,337	4,625	4,518

Krishna Canal.

The total rainfall gauged at Retre Budruk, which is situated in the centre of the canal tract, was 25·82 inches, as compared with the average of 28·35 inches for the past three years. Water could not be made available for sugarcane beyond mile 23·3 of the canal as its discharging capacity has been considerably reduced owing to the accumulation of silt. Water was also not available for rabi crops in the 4th section of the canal owing to scanty rainfall.

Rewari Canal.

The rainfall gauged at Rewari, which is situated one mile below the bandhara, was 20·41 inches, as compared with 29·58 inches, the average of the preceding three years.

Upper Man River Works.

(*Pingli Tank*).

On the 1st April, the level of the tank was at R. L. 2,359·24, equivalent to a storage of 26·75 million cubic feet. The tank was dry from the 15th May to the 22nd September, when the first replenishment was received and the level rose to R. L. 2,355·77. Further replenishments were received and the waste weir overflowed from the 20th November to the 3rd December. The H.F.L. was reached on the 20th November, when the R. L. was at 2,371·94. The rainfall gauged at Gondawla, which is situated 3 miles below the tank, was 14·47 inches as compared with 22·96 inches, the average of the preceding three years.

YERLA RIVER IRRIGATION WORKS.

(*Nehr Tank*).

On the 1st April, the water level in the tank was at R. L. 2,959·83, equivalent to a storage of 249·54 million cubic feet. The supply was utilised for hot weather irrigation. The first replenishment was received on the 27th June, raising the level to R. L. 2,656·61. The highest level reached during the year was R. L. 2,663·80, equivalent to a storage of 345·97 million cubic feet. The rainfall guaged at Nehr was 22·00 inches as compared with 29·80 inches, the average of the preceding three years.

CHIKHLI CANAL.

The canal receives its supply from the River Nandni. The first flood occurred on the 22nd May and the second on the 26th June with a depth of 4′ over the weir. The rainfall gauged at Chikhli was 15·75 inches compared with 24·94 inches, the average of the preceding three years.

MAINI TANK.

On the 1st April, the tank was dry. The first replenishment was received on the 22nd May and the water level stood at R. L. 2,299·82 i.e., 15·11 million cubic feet. This level however gradually diminished and the tank ran dry on the 27th July. The second replenishment was received on the 18th September when the R. L. rose to 2,299·02 i.e., equal to a storage of 9·58 million cubic feet and with the subsequent replenishment on the 26th September, the R. L. rose to 2,304·92. The tank dried up on the 1st February. The rainfall gauged at Maini was 13·57 inches as compared with 25·79 inches, the average of the preceding three years.

SHOLAPUR DIVISION.

The area irrigated, the gross assessed revenue and the working expenses of the tanks in the Sholapur Division, as compared with the corresponding averages of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Ekruk Tank	4,318	2,844	1,51,067	1,29,996	19,066	30,707
Koregaon Tank ..	63	491	402	2,441	1,894	1,916
Ashti Tank	3,767	2,516	22,968	13,435	11,496	49,985
Pathri Tank	675	585	11,964	12,783	3,523	3,561

Ekruk Tank.

The Ekruk Tank, situated near Sholapur, which came into operation in the year 1872–73, is an artificial reservoir formed by the construction of a large earthen embankment 7,000 feet long and having a maximum height of 76 feet. It supplies water not only for irrigational purposes but also to the town of Sholapur, the mills in Sholapur and the Great Indian Peninsula Railway for non-irrigational purposes. Under unfavourable conditions of replenishment, which occur periodically, the supply available from the tank is not sufficient to meet all the demands which arise, and the question of providing a supplementary storage for the Sholapur town supply is under consideration.

On the 1st April, the water level in the tank was 35·66 feet above the sill of the outlet. On the 31st May, it was 33·51 feet and the storage being satisfactory, water was allowed to 1,000 acres of monsoon crops and 300 acres of sugar cane. The tank did not receive any replenishment till the end of September. Good rains in November, however, provided a sufficient supply to meet the full demand for rabi crops. The mean rainfall gauged at the five stations in the catchment area of the tank was 16·82 inches as compared with 24·04 inches, the average of the preceding three years, and the total replenishment received amounted to 1,322·90 million cubic feet.

Koregaon Tank.

On the 1st April, the water level in the tank was at R. L. 87·80 i.e., 27·48 million cubic feet, which gradually fell to R. L. 81·70 i.e., 4·30 million cubic feet. Owing to rains in September, the level rose to R. L. 82·00. Again, it went down and the tank became dry on the 30th December. The demand was keen in both seasons and the available supply was utilised fully for monsoon and rabi irrigation. The rainfall was 16·37 inches as compared with 28·05 inches, the average of the preceding three years.

Ashti Tank.

On the 1st April, the water level in the tank was at R. L. 226·72 i.e., 16·95 feet above the sill of the outlet. The level gradually fell to R. L. 220·16 i.e., 378·09 million cubic feet. Due to rains in September, the level rose to R. L. 225·97 by the 1st October and a replenishment of 364·18 million cubic feet was received. There were rains again in November and the supply was sufficient to meet all demands. The mean rainfall guaged at the two stations situated in the catchment was 17·03 inches as compared with 23·60 inches, the average of the preceding three years.

Pathri Tank.

The tank supplies water to the town of Barsi and the mill industries as well as for irrigational purposes. On the 1st April, the water level in the tank was at R. L. 237·60 i.e., 28·30 feet above the sill of the outlet. This level gradually fell to 234·78 i.e., 235·48 million cubic feet. Owing to rains between May and July, the tank received a replenishment of 23·04 million cubic feet and again in September and November, it received

further replenishments of 75·41 and 82·44 million cubic feet, respectively. The supply was thus sufficient for both the seasons and the demands of the lease holders as well as of the Barsi Municipality were fully met. The average rainfall gauged at the two stations in the catchment was 23·16 inches as compared with 30·62 inches, the average of the preceding three years.

KHANDESH DIVISION.

JAMDA CANALS.

These canals receive their supply from the Girna river and the supply is supplemented from time to time by water obtained from the Chankapur Tank in the Nasik Irrigation Division. During the year under report, no water could, however, be obtained from the Chankapur Tank. The rainfall during the year was 23·64 inches as compared with 31·28 inches, the average of the preceding three years. The rainfall was very poor in July and August and nil in October. The following table gives the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,731	1,682	17,621	14,195	17,007	16,835

MHASWA TANK.

The tank derives its supply from local rains. On the 1st April, the contents of the tank were 22·73 million cubic feet, which gradually diminished to 8·19 million cubic feet. The first replenishment was received on the 18th June, when the contents increased to 29·52 million cubic feet. The maximum storage reached on the 21st November, was 144·32 million cubic feet. At the close of the year the storage stood at 21·79 million cubic feet. The rainfall gauged at the tank was 21·10 inches as compared with 28·73 inches, the average of the preceding three years.

The area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years are given below :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
51	143	1,930	1,268	1,346	1,601

Hartala Tank.

The tank derives its supply solely from local rains and this supply is precarious. On the 1st April, the storage amounted to 70·40 million cubic feet which gradually diminished to 41·76 million cubic feet. The first replenishment was received on the 17th June when the contents increased to 43·47 million cubic feet. The maximum storage of 91·16 million cubic feet was reached on the 3rd December. The rainfall gauged at the tank was 37·68 inches as compared with 35·92 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
·21	41	578	611	949	965

Shahada Channel.

The Channel is fed by the Gomai river which has a perennial flow. The rainfall gauged at Shahada was 23·14 inches as compared with 26·93 inches, the average of the preceding three years.

The area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years are given below :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1936-37.	Average.	1936-37.	Average.	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,013	998	963	438	12,427	9,738	5,764	7,675

Lower Panjhra River Works.

These works comprise 8 bandharas and 9 channels situated between Dhulia and Betawad on the Panjhra river and the Mukti Tank, which is situated about 4 miles to the South West of Dhulia. The Channels obtain their supply from the river, but when that supply is insufficient, it is supplemented by water obtained from the Mukti Tank.

On the 1st April, the contents of the tank were 241·07 million cubic feet which gradually diminished to 151·64 million cubic feet. The first replenishment was received on the 28th June, when the contents increased to 165·54 million cubic feet. The maximum storage of 315·65 million cubic feet was reached on the 23rd November. The year closed with a storage of 233·35 million cubic feet on the 31st March. The rainfall gauged within the catchment of Dayana and Sadgaon during the year was 21·30 inches as compared with 19·68 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses, as compared with the corresponding averages of the preceding three years :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Pastasthal.		Jirayat.					
1936–37.	Average.	1936–37.	Average.	1936–37.	Average.	1936–37.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,266	1,268	1,193	1,141	26,339	25,622	4,148	4,423

SOUTHERN CIRCLE.

BELGAUM DIVISION.

Gadikeri Tank.

The lands under the command of this tank are all assessed at consolidated rates. The area irrigated and the irrigation share of land revenue assessed were 418 acres and Rs. 2,344, respectively. The working expenses amounted to Rs. 321.

Gokak Canal.

This canal system is the most important irrigation scheme in the Southern Circle and consists of a reservoir formed by a masonry weir across the Ghataprabha river at Dhupdal in the Belgaum District together with 16 miles of main and branch canals and 36 miles of distributaries. The canal commands an area of 18,668 acres, the area irrigable being 17,627 acres. Although the Dhupdal storage is mainly intended for irrigating lands under the canal, a stipulated quantity of water is issued to the Gokak Mills Company in accordance with an agreement between Government and the Company, in consideration of which a sum of Rs. 14,313 is annually paid by the Company subject to a rebate in the event of a supply falling short of the quantity contracted for. During the year under report, a rebate of Rs. 2,211 had to be paid to the Company for short supply of water, the shortage in the reservoir being due to the failure of early rains.

Water was supplied to the M. & S. M. Railway Company at their Hukeri Road Station at a charge of Rs. 50 per month. The total amount recovered from the Railway Company on this account during the year was Rs. 600.

On the 1st April, the gauge reading of the water level in the Dhupdal reservoir was 17·32 feet. The level gradually decreased to 8·56 feet on the 22nd May. Owing to replenishment received the level rose to 11·52 on the 25th May, from which date the level decreased until the tank became quite dry on the 8th June. Subsequently owing to replenishment received the level rose to 10·70 feet on the 19th June. From this date onwards there was a gradual rise in the level until it reached 22 feet on the 25th June causing overflow of the weir. During the whole monsoon the highest flood depth over the crest of the weir was 3·20 feet on the 28th June. The maximum discharge for the day was 49,327 cusecs. In order to store the water for post monsoon floods the first instalment of the work of temporary raising of the weir by two feet was commenced on 26th September and completed on 14th October. The work of the second instalment was started on the 22nd October and finished on the 25th October. Water was conserved from the 25th October when the level was 24·00 feet. The tank filled to its full supply level on the 3rd November. The level of water on the 31st March was 22·88 feet.

The following table gives information regarding the area irrigated, the revenue assessed, as compared with the average of the preceding three years :—

——	Area irrigated.	Gross assessed revenue.	Working expenses.
	Acres.	Rs.	Rs.
Average	7,098	59,751	13,162
1936-37	8,293	65,246	11,957

DHARWAR DIVISION.

Muchkundi Tank.

The tank is solely dependent on local rains for its supplies and the storage of water in the tank is uncertain owing to the scanty rainfall in the area and the smallness of the catchment. The rainfall received during the year was more than that of the previous year; the tank was however empty from the 27th July to the 19th September. On the 1st April, the water level in the tank was at R. L. 1,791·65 or 8·21 feet above the sill of the outlet. The tank was empty from the 27th July to 19th September and it received the first replenishment on the 20th September and reached R. L. 1,785·94 or 2·50 feet above the sill of the outlet. The highest level of water reached during the year was at R. L. 1,801·91 on the 14th November i.e., 18·47 feet above the sill of the outlet. The level on the 31st March was at R. L. 1,798·25 or 14·81 feet above the sill of the outlet.

The gross assessed revenue was Rs. 882 while the working expenses amounted to Rs. 1,502.

Dambal Tank.

On the 1st April, the level of water in the tank was at R. L. 140·95 or 4·75 feet above the silted bed. The tank received its first replenishment on the 24th May when the level of water reached was R. L. 142·40 or 8 feet above the silted bed. It received the second replenishment on the 3rd October and the level of water reached was R. L. 145·30 or 9 feet above the silted bed, which was the highest level during the year under report. There was a sufficient supply of water in the tank throughout the year for irrigating the lands dependent on it. As the tank did not get dry, there was not much demand for the cultivation of the tank bed as a result of which there was a fall in the revenue. The level of water on the 31st March was R. L. 141·92 or 6 feet above the silted bed. Part of the land dependent on this tank is assessed at water rates, the balance being assessed at consolidated rates. The total area irrigated and the assessment levied under the former head (water rates) were respectively 300 acres and Rs. 941 compared with 116 acres and Rs. 530, the corresponding averages of the past three years. The area irrigated under consolidated assessment and the irrigation share of the land revenue assessed were 144 acres and Rs. 916, respectively. The total assessed revenue was Rs. 2,052, while the working expenses amounted to Rs. 29,135.

The work of constructing a feed channel from Kadampur North and South Nallas to Dambal Tank, which was undertaken on account of the scarcity conditions prevailing in the Mundargi Petha of the Dharwar District, was in progress. The work, when completed, is expected to improve the annual run-off to the tank, which is far below the requirements at present.

Medleri Tank.

The water level of the tank on the 1st April, was R. L. 166·06 or 1·06 feet above the sill of the outlet. The tank received its first replenishment on the 6th May and the highest level of water reached during the year was R. L. 180·60 or 16 feet above the sill of the outlet, causing overflow of the waste weir. There was sufficient water in the tank throughout the year. The water level on the 31st March was R. L. 172·12 or 7 feet above the sill of the outlet. The area irrigated and the assessment levied thereon were 44 acres and Rs. 521 as compared with 45 acres and Rs. 517, respectively, the averages of the past three years. The gross assessed revenue was Rs. 706 and the working expenses amounted to Rs. 626.

Madag Tank.

On the 1st April, the water level was R. L. 1,875·50 or 2·24 feet above the sill of the outlet. The tank received its first replenishment on the 28th June and overflowed from the 28th June to the 5th January. The highest water level reached during the year was R. L. 1,885·26 or 7·55 feet above the crest of the waste weir. The area irrigated and the

assessment levied thereon were 604 acres and Rs. 2,780 as compared with 523 acres and Rs. 2,651, respectively, the averages of the past three years. The gross assessed revenue amounted to Rs. 3,072 as compared with Rs. 2,937, the average of the past three years. The working expenses amounted to Rs. 3,173 as compared with Rs. 1,812, the average of the previous three years. The increase in working expenses is due to the special repairs carried out during the year.

Asundi Tank.

The tank was dry at the beginning of the year under report. The tank received its first replenishment on the 5th May and the highest level reached during the year was R. L. 104·00 or 5 feet above the sill of the outlet on the 23rd May. The supply of water in the tank was inadequate in the Kharif season for irrigating the lands dependent on it. The tank was empty on the 1st March, 1937. The lands under this tank are partly assessed at water rates and partly at consolidated rates. The area irrigated and the assessment levied thereon under the former head (water rates) were 21 acres and Rs. 67 as compared with 161 acres and Rs. 966, respectively, the corresponding averages of the previous three years. The area under consolidated assessment was 182 acres and the irrigation share of land revenue assessed thereon was Rs. 710. The gross assessed revenue amounted to Rs. 1,149 as compared with Rs. 2,121, the average of the past three years. The working expenses amounted to Rs. 826.

Dharma Canal.

The Dharma Canal is fed by the Dharma river and a number of tanks are in turn fed by the canal. The canal began to flow on the 24th June. All the second class tanks depending on this canal received good replenishment. An amount of Rs. 955 was spent on special repairs during the year. The lands commanded by this canal are assessed partly at water rates and partly at consolidated rates. The area irrigated and the assessment levied thereon under the former head (water rates) were 476 acres and Rs. 2,394 as compared with 473 acres and Rs. 2,535, respectively, the averages of the past three years. The area under consolidated assessment was 5,227 acres and the irrigation share of land revenue was Rs. 20,764. The gross assessed revenue (after deducting Rs. 23,156 to be credited to the old work) amounted to Rs. 25 while the working expenses amounted to Rs. 2,134.

KANARA DIVISION.

Mavinkop Tank.

The management of this tank has been entrusted to the Revenue Department. The rainfall was 52·56 inches. The supply of water in the tank was adequate for irrigation. The area irrigated, which is assessed at consolidated rates, was 479 acres and the irrigation share of land revenue was Rs. 2,045 as compared with 575 acres and Rs. 2,045 for the previous year respectively. The working expenses amounted to Rs.1,186 as compared with Rs. 349 for the previous year. The gross assessed revenue was Rs. 2,085.

SECTION II.

COMPRISING IRRIGATION WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

The area of irrigation under, and revenue due from, works for which neither capital nor revenue accounts are kept in the Deccan and Gujarat, as recorded in the register of these works, were 2,84,294 acres and Rs, 9,23,790, respectively. The following tables give details (by Districts) of the area irrigated, expenditure incurred, revenue realised, etc., in respect of those irrigation works on which expenditure was incurred during the year :—

TABLE I.

Showing the area irrigated in the different Districts in the Province of Bombay and the consolidated revenue and Water rates assessed and recovered during the year 1936-1937 in respect of Irrigation works classed under " Works for which neither Capital nor Revenue accounts are kept " on which expenditure was incurred during the year.

Collectorate.	Revenue.					Remarks.
	No. of works.	Area.	Irrigation share.	Land share.	Total	
Ahmedabad ..	30	902	(A)1,136	3,954	5,090	(A) Includes Rs. 804 on account of " Direct Receipts—Water rates ".
Kaira ..	31	5,903	(B)983	..	983	(B) Direct Receipts—Water rates.
Panch Mahals ..	19	303	(C) 831	1,436	2,267	(C) Includes Rs. 142 on account of " Direct Receipts, Water rates ".
Surat ..	36	1,757	4,030	17,063	21,093	
Broach ..	1	28	39	141	180	
East Khandesh ..	2	184	1,775	586	2,361	
West Khandesh ..	4	787	(D) 4,797	683	5,480	(D) Includes Rs. 131 on account of " Direct Receipts, Water rates."
Nasik ..	51	7,383	(E) 75,063	17,280	92,343	(E) Includes Rs. 2,053 on account of " Direct Receipts, Water rates ".
Poona ..	1	353	(F) 561	..	561	(F) Direct Receipts—Water rates.
Sholapur ..	3	643	(G) 2,243	..	2,243	(G) Direct Receipts—Water rates.
Ahmednagar ..	2	1,751	(H) 25,102	..	25,102	(H) Direct Receipts—Water rates.
Belgaum ..	64	5,441	26,829	6,705	33,534	
Bijapur ..	1	56	102	49	151	
Dharwar ..	64	8,520	33,318	8,362	41,680	
Kanara ..	62	4,724	12,122	3,016	15,138	
Ratnagiri ..	1	211	827	..	827	
	372	38,946	1,89,758	59,275	2,49,033	

TABLE II

TABLE

Showing actual expenditure and receipts for the year 1936–37 on Capital nor Revenue Accounts

Collectorate.	Expenditure.						
	Direct Charges.						
	Extension and Improvements.	Maintenance and Repairs.	Establishment.	Tools and Plant.	Total.	Share of collection charges.	Grand Total.
1	2	3	4	5	6	7	8
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ahmedabad ..	1,793	18,483				114	
Kaira ..	2,976	15,180	14,331	877	70,085	98	70,372
Panch Mahals ..	4,756	11,689				75	
Surat ..	..	19,682				403	
			5,199	318	25,428		25,835
Broach ..	..	229				4	
East Khandesh ..	120	807				177	
			1,666	28	3,724		4,371
West Khandesh ..	348	755				470	
Nasik ..	2,413	54,240	47,001	591	1,04,245	7,342	1,11,587
Poona ..	831	12,477	37,333	139	50,780	1	50,791
Sholapur ..	..	1,975	1,834	28	3,837	55	3,892
	works.						
Ahmednagar ..	4,658	12,486	21,340	179	38,663	494	39,157
Belgaum ..	1,636	25,207				2,684	
			9,643	520	37,085		39,779
Bijapur ..	..	79				10	
Dharwar ..	3,400	40,582	15,767	824	60,573	3,338	63,911
Kanara ..	2,971	15,428	6,591	356	25,346	1,212	26,558
Ratnagiri ..	..	170	61	3	234	83	317
Total ..	Works 4,658 Extension and Improvement 21,244	2,29,469	1,60,766	3,863	4,20,000	16,570	4,36,570

II.

the Irrigation Works in the Province of Bombay for which neither are kept referred to in Table I.

Actual Receipts.

Direct Receipts.			Indirect Receipts Share of Consolidated. Revenue.	Grand Total Direct and Indirect Receipts.	Less Refunds of Revenue.	Gross Receipts. Less—Refunds.
Water rates from Irrigation.	Miscellaneous.	Total Direct Receipts.				
9	10	11	12	13	14	15
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
804	626	1,430	332	1,762	....	1,762
983	3,681	4,664	....	4,664	....	4,664
142	673	815	689	1,504	....	1,504
....	....	....	4,030	4,030	....	4,030
....	....	....	39	39	....	39
....	....	....	1,775	1,775	....	1,775
131	106	237	4,666	4,903	....	4,903
2,053	1,266	3,319	73,010	76,329	....	76,329
561	192	753	....	753	....	753
2,243	1,242	3,485	....	3,485	....	3,485
25,102	7,212	32,314	....	32,314	....	32,314
....	10	10	26,829	26,839	....	26,839
....	....	....	102	102	....	102
....	84	84	33,318	33,402	....	33,402
....	....	....	12,122	12,122	....	12,122
....	....	....	827	827	....	827
32,019	15,092	47,111	1,57,739	2,04,850	....	2,04,850

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

AHMEDABAD, KAIRA AND PANCH MAHALS AND SURAT AND BROACH DIVISIONS.

KHARI SLUICES.

The Khari Sluices system is fed by the Khari river and supplemented by small reservoirs and tanks such as Bherai and Naika reservoirs, Saranga and other small second class tanks.

The scanty rainfall in the catchments of the Khari during the year and the absence of floods in the months of July, August and September caused insufficient flow in the river with the result that rice was transplanted in only 700 acres on the river water in the whole area assessed to himayat in the Kalambandhi villages. In the latter months, when the rice area was badly in need of the last watering the little flow in the river completely ceased and the situation became critical. To bring the crop to maturity it was decided to utilise the supply in the Bokh Reservoir for giving the last watering to that area. This was done by drawing the water from the Bokh into the Khari Cut Canal. An area of about 270 acres thus received the last watering. Besides this, an area of about 23 acres of non-himayat lands was also irrigated under the system as compared with 307 acres in the previous year.

The Khari Sluices including the Goblaj Tank, the Bherai and Naika reservoirs were maintained in good order at a cost of Rs. 4,589. The sums of Rs. 340 and Rs. 2,050 were also spent on special repairs to the Goblaj Tank and Bherai reservoir, respectively. The miscellaneous revenue realised under the Khari Sluices system amounted to Rs. 405 as compared with Rs. 437 received in the previous year.

The following table compares the areas irrigated and assessment levied with the average of the previous 3 years :—

	Average.		1936-37.	
	Area.	Revenue after deducting remissions.	Area.	Revenue after deducting remissions.
	Acres.	Rs.	Acres.	Rs.
I. Irrigation above Kalambandhi villages (of Mahij, Bidaj and Lali).	1,419	7,224	463	939*
II. Irrigation from tanks that are fed by the river Khari—				
Goblaj ..	624	4,863	88	552**
Galki ..	372	1,166	....	(A)
III. Irrigation from the Khari sluices proper (i.e., 11 Kalambandhi villages)	6,402	26,788	5,862	(B)
Total ..	8,817	40,041	6,413	1,491

* Revenue is consolidated and it is less due to scanty rainfall.

** Less revenue due to scanty rainfall.

(A) No revenue as the tank was empty due to no run-off from its catchment.

(B) No revenue is realised as it is partly remitted and partly suspended due to failure of crops owing to scanty rainfall.

As the assessment under the Khari Sluices has been partly suspended and partly remitted due to failure of crops owing to scanty rainfall during the year under report, no average rate per acre can be worked out.

Muvalia Tank.

This is an important tank situated in the vicinity of Dohad town in the Broach and Panch Mahals Collectorate and it has a catchment area of about 30 square miles. During the year under review, it received only partial replenishment due to scanty rainfall. The total area irrigated under the tank was 81 acres and the net assessment amounted to Rs. 280. The miscellaneous revenue amounted to Rs. 459 as compared with Rs. 866 received in the previous year. The tank with its dam, canals, etc., was maintained in good order at a cost of Rs. 4,421.

Old Tanks.

Improvements to 1 tank and repairs to 19 tanks in the Ahmedabad Division, 24 tanks in the Kaira and Panch Mahals Division and 37 tanks in the Surat and Broach Division were carried out during the year at a total cost of Rs. 976 and Rs. 50,506 respectively.

The area irrigated and the revenue derived from the old irrigation tanks and bunds were as under :—

Name of Collectorate.	Area irrigated.	Revenue.		
		Irrigation share.	Land share.	Total net consolidated assessment.
	Acres.	Rs.	Rs.	Rs.
Ahmedabad	9,007	12,147	42,370	54,517
Kaira	221	643	73	716
Broach and Panch Mahals	316	2,170	6,451	8,621
Surat	896	2,095	14,406	16,501
Total ..	10,440	17,055	63,300	80,355

Drainage Channels.

The drainage channels in the Ahmedabad, Kaira and Panch Mahals and Surat and Broach Divisions were maintained in good order at a cost of Rs. 7,971, Rs. 4,000 and Rs. 7,274, respectively.

DECCAN IRRIGATION CIRCLE.

POONA IRRIGATION DIVISION.

Rakh Tank.

This tank is situated about 5 miles from Walha railway station of the Madras and Southern Mahratta Railway and is formed by an earthen dam constructed across a nala near Rakh village in Purandhar Taluka of the Poona District. The tank has two channels of a total length of $3\frac{5}{8}$ miles. The area under command on channel No. 1, which is on the left bank, is 265 acres and that on channel No. 2 is 321 acres. The main channel is designed to discharge 12·8 cusecs leaving sufficient margin for all losses in transit. The total area irrigated during the year was 84 acres and the revenue assessed amounted to Rs. 518 as compared with 38 acres and Rs. 176, respectively, during the previous year.

Khamgaon Tank.

This tank which is only partially completed received replenishment during the monsoon from the Mutha Right Bank Canal. The supply available was issued for irrigating 353 acres and the revenue assessed was Rs. 1,395, the corresponding figures for the previous year, being 70 acres and Rs. 347, respectively. The increases in the area irrigated and the revenue assessed were due to shortage of rain.

Effluent Irrigation on the Mutha Right Bank Canal.

The total area of sugarcane irrigated on effluent during the year was 1,164 acres as compared with 1,055 acres during the previous year. The average discharge pumped during the year was 9·91 cusecs, out of which 9·55 cusecs were utilised for purposes of irrigation and the balance of 0·36 cusecs was run off to the winter disposal area. The total area irrigated was 1,474 acres as against 1,382 acres of the previous year. The assessed revenue amounted to Rs. 53,538 as compared with Rs. 52,580 of the previous year. The small increase in the assessed revenue was due to increase in the effluent rate which was raised from Rs. 59 per acre to Rs. 60 per acre during the year under report.

Bandharas (Poona District).

Bandharas are small weirs built across streams in order that the level of the water flowing in the streams may be raised sufficiently to command the lands to be irrigated. The following table gives the area irrigated and the consolidated assessed revenue on the bandhara irrigation works in the Poona Collectorate during the year as compared with the average of the past three years :—

Particulars.	Area irrigated.	Consolidated revenue.		Total.
		Irrigation. share.	Land share.	
	Acres.	Rs.	Rs.	Rs.
1936-37 ..	2,778	14,246	4,960	19,206
Average ..	2,752	14,296	4,908	19,204

NASIK IRRIGATION DIVISION.

Khirdi Sathe Tank.

This is a small tank in Yeola Taluka of the Nasik District. The tank is formed by an earthen dam and is dependent on local rains for its supply, which is generally sufficient for crops grown during the monsoon and rabi seasons.

On the 1st April, the level of water in the tank above the sill was 4·40 feet, the corresponding contents being 6·5 million cubic feet. The level of water went down to 2·10 feet on the 21st May, the contents being 2·5 million cubic feet. The highest level of water rose to 6·50 feet, the corresponding contents being 11·33 million cubic feet. The draw off for irrigation purposes commenced on the 8th July when the level of water was 6·20 feet, the contents being 10·54 million cubic feet. The tank went dry on the 8th March 1937. The area irrigated during the year was 174 acres as compared with 208 acres of the previous year. The decrease was due to the shortage of rainfall. The assessed revenue

amounted to Rs. 1,003 as compared with Rs. 2,926 of the previous year and the gross revenue was Rs. 1,125 as compared with Rs. 3,322 of the previous year.

Bandharas (Nasik District).

There are numerous bandharas situated in this District. There are in all 299 such bandharas on the list. The expenditure incurred to carry out repairs to bandharas (28 in number) during the year amounted to Rs. 53,000. The following table gives the area irrigated and the consolidated assessed revenue during the year as compared with the averages of the past three years :—

Particulars.	Area irrigated.	Consolidated revenue.		Total.
		Irrigation share.	Land share.	
	Acres.	Rs.	Rs.	Rs.
1936-37 ..	26,869	1,66,090	50,660	2,16,750
Average ..	28,133	1,83,768	50,105	2,33,873

AHMEDNAGAR DIVISION.

Visapur Tank.

The Visapur Tank dam which is situated about 2 miles from the Visapur railway station on the Dhond-Manmad Railway line is built across the Hanga river, a tributary of the Bhima river. It was started as a famine relief work in 1896 and was subsequently completed in successive stages by criminal tribes and convict labour by June 1927. This earthen dam, which is 7,440 feet long and 84 feet high, forms a lake having a net capacity of 1,136 million cubic feet. The estimated cost of the whole scheme was Rs. 41 lakhs of which Rs. 21 lakhs were spent on the dam and head works and the balance on the construction of the canal distributaries and minors which aggregate 46 miles in length. The total area under command is 95,000 acres of which 26,000 acres are irrigable. The catchment area of the tank is 159 square miles in extent and it has a capacity of 1,172 million cubic feet. The irrigation from this tank was first started during the rabi season of 1929-30. Owing to an increased demand for water due to the starting of a small sugar factory on Chimbla Distributary, the waste weir was raised by 2 feet in March 1934 to increase the storage in the tank by 130·20 million cubic feet. The yield from the catchment (159 square miles) was 359·03 million cubic feet during the year, the average rainfall being 11 inches.

On the 1st April, the level of water in the tank was 24·10 feet above the sill of the outlet, the contents being 463·02 million cubic feet. The

lowest level of 14·25 feet was reached on the 16th September, the corresponding contents being 192·83 million cubic feet. Replenishment was received on the 29th September, the corresponding contents being 201·26 million cubic feet. The highest level of 21·50 feet was reached on the 1st December and continued to remain so for two days, the corresponding contents being 378·29 million cubic feet. On the 31st March 1937, the level of water in the tank was 16·15 feet, the corresponding contents being 234·83 million cubic feet. There was no flow over the waste weir during the year as the replenishment was not sufficient to fill the tank. The area irrigated, the irrigation assessment and the gross assessed revenue were 1,748 acres, Rs. 9,412 and Rs. 16,710 as compared with 1,778 acres, Rs. 16,734 and Rs. 20,395, respectively, the averages of the past three years. The expenditure incurred on maintenance and repairs to the tank and canal amounted to Rs. 5,947.

Kuntephal Tank.

This is a very small tank with a capacity of about 57 million cubic feet. It is situated on a small nala near Shevgaon about 45 miles from Ahmednagar and it is entirely dependent for its supply on local rains. On the 1st April, the level of water in the tank was 10·44 feet above the sill, the corresponding contents being 24·53 million cubic feet. The tank dried up on the 18th August. Replenishment was received on the 17th November and the level rose to 2 feet, the corresponding contents being 1·18 million cubic feet. The highest water level of 7 feet was reached on the 19th November. The rainfall during the year was 8·39 inches as compared with 29·30 inches, the average of the past three years. The expenditure incurred on maintenance and repairs amounted to Rs. 996.

Mandavgan Tank.

This tank is situated on a nala about 2½ miles away from Mandavgan village, taluka Shrigonda in the Ahmednagar District. The earthen dam is 1,605 feet in length. The tank has a hilly catchment of about 5·32 square miles. It is entirely dependent on local rains for its supply. This tank has been taken over from the District Local Board, Ahmednagar, from rabi season of 1932–33 for irrigation management. The tank was dry on the 17th May. Replenishment was received on the 22nd May when the water rose to 12·60 feet. The highest water level of 29·35 feet was reached on the 1st December, the contents being 42·42 million cubic feet.

The area irrigated and the water rates assessed during the year were 75 acres and Rs. 325 as compared with 13 acres and Rs. 64, respectively, of the previous year. The increases in the area irrigated and the assessment were due to seasonal irrigation. The expenditure incurred on maintenance and repairs amounted to Rs. 948.

CENTRAL CIRCLE.

The area irrigated and the gross assessed revenue on small tanks were 934 acres and Rs. 4,350, respectively. The area irrigated and the irrigation share of revenue on the old bandharas and channels in the Khandesh Division were 8,677 acres and Rs. 65,130, respectively.

SHOLAPUR DIVISION.

WADSHIVNE TANK.

This is a small tank with an earthen dam 3,628 feet long and 47·78 feet high, solely depending on local rains.

On the 1st April, the water level in the tank was at R.L. 452·18 i.e., 16·18 feet over the sill of the outlet. This level gradually went down to 445·27 i.e., 57·69 million cubic feet. The total replenishment received during the year was 13·74 million cubic feet. The tank ran dry on the 13th March.

During the year under report the area irrigated and the gross assessed revenue were 643 acres and Rs. 2,748 as compared with 381 acres and Rs. 1,814, the corresponding averages of the preceding three years. The mean rainfall gauged at the two stations was 12·37 inches as compared with 29·96 inches, the corresponding average of the preceding three years.

KHANDESH DIVISION.

TALWADA TANK.

The supply in this tank is very uncertain. On the 1st April, the tank was dry. The first replenishment of 2·73 million cubic feet, was received on the 26th June. The maximum storage reached on the 17th November, was 22·69 million cubic feet. The year closed, leaving the tank dry again.

The rainfall gauged at the tank was 15·24 inches as compared with 17·23 inches, the average of the preceding three years. The area irrigated was 291 acres and the gross assessed revenue amounted to Rs. 1,602. The revenue realised from water rates was Rs. 130, the miscellaneous realisations being Rs. 106. The expenditure incurred on maintenance and repairs to the tank and canal was Rs. 400.

OLD WORKS.

The old bandharas and channels are grouped as under :—

1. The Upper Panjhra river group including the Gondur Tank.
2. The Kan river group.
3. The Burai river group.
4. The Girna river group.
5. The Bori river group.

The subjoined table shows the area irrigated and the revenue derived from these works as compared with the averages of the preceding three years.

Area irrigated.		Revenue.					
		Irrigation share.		Land share.		Total.	
1936-37.	Average	1936-37	Average	1936-37.	Average.	1936-37.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
8,677	8,644	65,130	65,033	13,187	13,184	78,317	78,217

The expenditure on these bandharas was as under :—

	Rs.
Extensions and Improvements	467
Repairs	1,163

An expenditure of Rs. 187 was also incurred on river and rain gauge operations during the year.

SOUTHERN CIRCLE

BELGAUM DIVISION.

There are approximately 525 second class irrigation tanks situated in the Belgaum Division. During the year under report repairs to 65 tanks were carried out at a cost of Rs. 25,286 and in addition to this sum an expenditure of Rs. 1,636 was incurred on the survey of the old tanks. The area irrigated during the year was 12,594 acres, the irrigation share of land revenue being Rs. 1,22,576. The total direct and indirect receipts amounted to Rs. 1,18,347 as compared with Rs. 1,00,654 during the previous year. The remissions sanctioned during the year amounted to Rs. 5,373.

DHARWAR DIVISION.

There are about 2,940 tanks in this Division. During the year under report, an expenditure of Rs. 36,070 and Rs. 3,400 was incurred in carrying out repairs to 63 tanks and surveys of old tanks, respectively. The area irrigated during the year was 49,771 acres and the irrigation share of the land revenue amounted to Rs. 1,31,301. The remissions granted during the year were Rs. 55,755. The total direct and indirect receipts were Rs. 1,31,585 as compared with Rs. 1,45,492 for the previous year.

KANARA DIVISION.

In this Division, there are about 2,128 tanks. During the year, an expenditure of Rs. 15,428 was incurred on repairs to 61 tanks.

In addition, a sum of Rs. 2,971 was spent on surveying tanks and preparing projects for repairs. The area irrigated during the year was 31,246 acres and the irrigation share of land revenue amounted to Rs. 90,192.

RATNAGIRI DIVISION.

There are only 3 tanks in this Division. Special repairs to the tank at Varad, estimated to cost Rs. 768, which were in progress since the last year, were completed during this year. The area irrigated was 1,103 acres and the irrigation share of land revenue was Rs. 6,583. The gross assessed revenue amounted to Rs. 6,583 which was realised in full during the year.

SECTION III.

IRRIGATION RESEARCH DIVISION.

In the Deccan, when a large perennial canal is opened, widespread water-logging is liable to ensue. Some of this water-logging dries out later, but the damage often extends rapidly into the valleys, and unless steps are taken to set matters right, the damage, consisting mainly of salt-efflorescence, becomes permanent. The seriousness of the menace was realised as early as 1888 and the controversy regarding the relative effect of channel losses and wasteful irrigation and the best methods to adopt to safe-guard the land became yearly more acute. Various experiments were carried out at the instance of the Agricultural Department but by 1913 it was clear that all the methods tried so far had failed. It was eventually decided to open a Special Irrigation Division in order that the question of canal development, especially as regards safe-guarding the soil, might form the subject of investigation. In June 1916, the Division (now called the Irrigation Research Division) was formed and the work entrusted to it was the contouring of the commanded areas, the carrying out of a careful survey and classification of the surface and sub-soil, the selection and marking out of definite areas suitable for "blocks" for perennial and other crops, the designing of the drainage works required, indication of suitable lines of communication and centres for the establishment of crushing, grinding, and refining and other machinery for trade purposes and the study of the question of the reclamation of waste lands and areas damaged by water-logging and salt-efflorescence and the growth of useful timber in such tracts and along the main canal. In short, research and investigation into all the problems relating to irrigation by actual experiment has been the sphere of work of this Division.

The investigations coming within this sphere may be broadly grouped under five heads, viz.:—

(1) Irrigation management,

(2) Irrigation requirements or the inter-action of agricultural requirements and irrigation limitations,

(3) Soil physics of irrigated tracts, as affecting,

(4) Drainage and reclamation, and

(5) Hydrodynamic research.

The work done by this Division may be classified as under :—

(1) Sub-soil survey and observation of sub-soil water levels,

(2) Irrigation and blocks,

(3) Sub-soil drainage construction,

(4) Drainage schemes for allotted sugar factory areas,

(5) Irricultural research, and

(6) Hydrodynamic research. (This work is now entrusted to the Director, Central Irrigation and Hydrodynamic Research Station, Poona.)

A brief account of the work done during the year under each of these heads is given below :—

(1) Sub-soil survey and observations of sub-soil water levels.

The observations of damage and well water levels on the Godavari, the Pravara and Nira Canals were continued. The water levels and damage on the Pravara and the Godavari Canals were more or less constant though the sugarcane areas gradually increased. Damage increased on the Nira Canals. Safe limits of sugarcane areas to be allowed on each distributary of the Nira Right Bank Canal were under preparation.

(2) Irrigation and Blocks.

Individual inspection of lands as regards the drainage and the suitability of the soil for fruit-gardens for which applications were received were carried out during the year. Applications for the exemption from the rule disallowing perennial irrigation within 1/4th mile limit of towns and villages were investigated. A general investigation and enquiry about the sugarcane areas to be allowed on each canal was under progress. Plans of positional suitability of fruit-gardens for all canals in the Deccan Irrigation Circle were under preparation.

(3) Sub-soil drainage construction.

Detailed observations were made in the areas served by the drainage schemes already constructed. The improvement in the condition of the damaged areas continued. Proposal for additional drainage in the Manjri Drainage Scheme on the Mutha Right Bank Canal were considered.

(4) Drainage schemes for allotted factory areas.

Considerable progress was made in the projects for land drainage in the allotted sugar factory areas and several projects of drainage schemes were submitted for sanction. A careful watch was being kept on the factory areas in many catchments in which full sugarcane concentration has been reached. Working drawings for the drains were also prepared as the construction work of these drainage projects will be taken in hand shortly.

(5) Agricultural Research.

In the Hadapsar Effluent Experimental Area, field experiments were carried out with a view to finding out the best varieties of sugarcane and the most suitable treatment and methods of cultivation of sugarcane manured by effluent. It was noticed that for this kind of irrigation, POJ 2878 and 2883 varieties of sugarcane are most suitable. Fourteen

varieties received from Coimbatore were under trial. The question of the disposal of the increasing quantity of effluent by more concentrated application and the effect of the soil of effluent manuring year after year was also under investigation. It was found that heavy application of effluent did not affect the yield.

In the Baramati Experimental Salt Area, field experiments on soil reclamation after drainage based on the data from laboratory and plot scale experiments were carried out. Observations of various type of soil under irrigation and under conditions of high and low sub-soil water level were also made. Methods of cultivation, fertilizers, green manures and sugar cane varieties suited to the process of reclamation were tested with satisfactory results. The research work has wide application to the damaged areas on the Deccan Canals.

MOI Bk F 12—8

STATEMENT

Statement of Area irrigated by Irrigation Works in the

No.	Name of Work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	Southern Circle.							
1	Gadikeri Tank	*418	..	*418	*418	..	..	..
2	Mavinkop Tank	*479	..	*479	*479	..	..	..
	Central Circle							
3	Ekruk Tank	784 1,990	229 2,328	1,013 4,318	4,266	52	..	..
4	Shahada Channel	368 374 *784	569 589 *229	937 963 *1,013	963 *1,013	..	20	1·01
	Total, Productive ..	2,364 *1,681	2,917 *229	5,281 *1,910	5,229 *1,910	52	20	28
5	Hathmati and Khari Cut Canal ..	†62 4	†63 ..	125 4	73 ..	52 4	.. ..	.. ..
6	Wangroli Tank	68	..	68	66	2	..	..
7	Savli Tank	188	78	266	250	16	..	..
8	Sahiat Tank	142	6	148	146	2	..	..
9	Tranza Nagramma Tanks	..	1	1	..	1	..	..
10	Futelao Tank	..	..	..	..	..	..	..
	Deccan Irrigation Circle.							
11	Nira Left Bank Canal	29,915 41,155	45,597 27,917	69,072	68,764	308	2,064	3
	Shetphal Tank	3,052 3,922	9,428 2,696	6,618	6,611	7	377	6
12	Nira Right Bank Canal	29,665 23,178	33,068 27,456	50,634	50,625	9	47	·09
13	Mhaswad Tank	2,920 2,920	1,583 1,584	4,504	4,494	10	..	..

I-E.

Province of Bombay, during the year 1936-37.

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
..	..	..	..	..	..	..	..	15th February to 14th October.	15th October to 14th February.
..	..	..	..	..	..	..	..		
16·32	23·55	16·32	23·55	129	102	129	102	Do.	Do.
7·62	12·30	7·62	12·30	163	102	163	102	Do.	Do.
..	..	..	..	..	..	..	..		
§22	‖5	§12	‖5	1·36	‖	2·50	‖	15th June to 15th November.	16th November to 14th February.
74	4	¶74	¶4	..	..	..	..		
1·26	..	1·26	..	53·96	..	53·96	..	Do.	Do.
20·36	3·93	20·36	3·93	9·23	19·84	9·23	19·84	Do.	Do.
5·95	0·13	5·95	0·13	23·86	46·15	23·86	46·15	Do.	Do.
..	..	..	..	..	..	..	..	Do.	Do.
..	..	..	..	..	..	..	..	Do.	Do.
497	451	419	420	60	101	71	108	15th February to 14th October.	15th October to 14th February.
27	34	27	34	113	130	113	130	Do.	Do.
375	458	263	389	(a)79	72	113	85	Do.	Do.
53	39	53	39	(a)55	41	55	41	15th February to 14th October.	15th October to 14th February.

STATEMENT

No.	Name of Work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT —*contd.*	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	Deccan Irrigation Circle—contd.							
	Mutha Canals	10,335 11,428	6,655 2,508	13,936	13,802	134	..	..
14	Matoba Tank (c)	1,124 1,394	1,992 1,752	3,146 29(*b*)	3,146	..	..	..
15	Kasurdi Tank (c)	10 10	9 9	19	19	..	..	..
16	Shirsuphal Tank (c)	405 512	891 485	997	997	..	..	..
17	Bhadalwadi Tank (c)	309 259	941 939	1,198	1,198	..	..	..
	Lake Beale-Darna Dam	357 357	140 140	497	..	497	..	..
18	Godavari Right Bank Canal	18,468 23,494	11,438 6,361	29,835	29,716	139	1,214	4
	Godavari Left Bank Canal	11,997 15,637	8,860 4,294	19,931	18,389	1,542	1,220	6
19	Chankapur Tank-Girna Canal	6,491 7,660	4,170 4,777	12,437	12,408	29	..	..
	Kadwa River Works — Palkhed Canal ..	989 1,074	1,240 852	1,926	1,914	12	..	..
20	Kadwa River Works — Ojhar-Tambat Canal	630 694	683 330	1,024	1,024	..	..	..
	Kadwa River Works — Wadali Canal ..	457 530	560 288	818	818	..	..	..
21	Parsul Tank (c)	113 114	847 859	973	973	..	..	..
	Pravara Right Bank Canal	8,194 8,810	8,439 4,470	13,280	13,280	..	505	3·80
22	Pravara Left Bank Canal	28,032 24,935	29,393 14,912	39,847	39,550	297	278	0·70
23	Bhatodi Tank (c)	106 108	608 568	676	646	30	..	..

I-E—*contd.*

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
195	131	(c)	107	(d)53	(d)51	...	62	15th February to 14th October.	15th October to 14th February.
19	18	19	18	59	106	59	106		
..	..	..	..	..	..	..	..	Do.	Do.
3·7	3·2	3·7	3·2	109	122	109	122	Do.	Do.
2·4	5·2	2·4	5·2	170	181	170	181	Do.	Do.
..	..	..	..	..	..	..	..		
201	166	201	166	(g)92	(g)69	(g)92	(g)69	Do.	Do.
142	119	142	119	(g)84	(g)74	(g)84	(g)74		
78	77	78	77	83	54	83	54	Do.	Do.
16	26	16	26	62	48	62	48		
7	8	7	8	90	85	90	85	Do.	Do.
5	8	5	8	91	70	91	70		
0·36	3	0·36	3	314	282	314	282	Do.	Do.
110	101	101	95	(b)75	(b)83	(b)81	(b)89	Do.	Do.
395	445	378	437	(b)71	(b)66	(b)74	(b)67	Do.	Do.
6·29	2·95	5·00	2·68	(f)17	(f)203	(f)21	(f)227	Do.	Do.

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*contd.*	Acres.	Acres.	Acres	Acres.	Acres.	Acres.	
	Central Circle.							
24	Koregaon Tank	48 57	5 6	53 63	62	1	..	..
25	Ashti Tank	1,404 1,541	1,922 2,226	3,326 3,767	3,757	10	..	..
26	Pathri Tank	15 18	595 657	610 675	621	54	..	..
27	Jamda Canals	545 578	1,085 1,153	1,630 1,731	1,728	3	..	..
28	Hartala Canal	1,179 8	87 13	1,266 21	21	..	..	..
29	Mhaswa Tank	7 ..	13 51	20 51	51	..	..	..
30	Lower Panjhra River Woks	408 425 *1,179	750 768 *87	1,158 1,193 *1,266	1,192 *1,266	1	558	22·69
31	Krishna Canal	2,499 2,970	576 677	3,075 3,647	3,091	556	26	0·8
32	Revari Canal	113 173	332 393	445 566	565	1	35	60·86
33	Upper Man River Works	54 63	676 786	730 849	845	4	62	8·00
34	Yerla River Irrigation Works	593 688	3,040 3,691	3,633 4,379	4,331	48	265	7·00
35	Chikhli Canal	152 189	128 164	280 353	347	6	15	5·00
36	Maini Tank	32 49	717 844	749 893	874	19	1	1·00
	Southern Circle.							
37	Goknk Canal, First Section and Storage Works.	5,091	3,202	8,293	8,023	270	698	8·42
38	Muchkundi Tank	8	..	8	8	..	..	..
39	Dambal Tank	97 *144	203	300 *144	300 *144	..	..	..

I-E—*contd.*

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
0·51	0·092	0·51	0·092	108	65	108	65	15th February to 14th October.	15th October to 14th February.
6·11	9·68	6·11	9·68	234	203	234	203	Do.	Do.
0·29	2·40	0·29	2·40	59	249	59	249	Do.	Do.
27·84	32·84	27·84	32·84	21	42	21	42	Do.	Do.
0·08	0·11	0·08	0·11	87	118	87	118	Do.	Do.
0·16	0·56	0·16	0·56	..	85	..	85	Do.	Do.
2·38	2·81	2·38	2·81	681	436	681	436	Do.	Do.
36·33	67·40	36·33	67·40	104	62	104	62	Do.	Do.
1·80	2·80	1·80	2·80	72	150	72	150	Do.	Do.
0·45	2·68	0·45	2·68	158	265	158	265	Do.	Do.
6·00	17·78	6·00	17·78	118	197	118	197	Do.	Do.
0·90	1·27	0·90	1·27	203	197	203	197	Do.	Do.
0·13	4·86	0·13	4·86	308	156	308	156	Do.	Do.
47·285	49·76	47·285	49·76	102·92	95·21	102·21	95·21	15th February to 14th October.	15th October to 14th February.
..	..	..	..	..	..	..	..	Do.	Do.
2·2	2·3	2·2	2·3	109·09	88·26	109·09	88·26	16th January to 15th October.	16th October to 15th January.

STATEMENT

	Name of Work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*contd.*	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	Southern Circle—contd.							
40	Medleri Tank	40	4	44	39	5	..	..
41	Madag Tank	383	221	604	604	..	..	..
42	Asundi Tank	9	12 *182	21 *182	19 *182	2	..	..
43	Dharma Canal	476 *5,227	.. ..	476 *5,227	476 *5,227	..	..	..
	Total, Unproductive ..	181,518 *6,550	118,416 *269	299,934 *6,819 29(h)	295,863 *6,819	4,071 ..	7,365 ..	2·4
	Grand Total, Productive and Unproductive	183,882 *8,231	121,333 *498	305,215 *8,729 29(h)	301,092 *8,729	4,123 ..	7,385	2·35

Note.—The bold figures in brackets represent areas actually irrigated during the respective seasons and the duties have irrigated. To obtain correct duties therefore these crops have to be added to the rabi areas.

(*a*) Low duties on the Nira Right Bank Canal and Mhaswad Tank are due to scattered nature of irrigation.

(*b*) The duties on the Pravara canals are low due to high proportion of sugarcane and other perennial crops.

(*c*) Figures of "utilised" discharge are not available, as the quantity let into the Matoba tank could not be accurately

(*d*) The low duties are due to high proportion of perennial irrigation and to supply of water for domestic purposes

(*e*) There is generally no supply in the Kasurdi, Shirsuphal, Matoba, Bhadalwadi, Parsul and Bhatodi tanks in the hot other causes. The actual number of days on which the channels were in flow has therefore taken for purposes of

(*f*) The high duties on the Bhatodi tank are due to concentrated irrigation on small channel and because major portion

(*g*) The high duties on the Godavari canals are due to increase in area of fodder crops which requires less water.

(*h*) Area irrigated by underground percolation.

* Area under consolidated assessment.

† Includes 32 acres for Hot season,

‡ This area was irrigated by the leakage and lift water available in the ravines of the Bokh Reservoir.

§ 10 (22—12=10) cusecs were supplied to Khari cut canal and Khari sluices *via* Bhujwa channel to Bokh Reservoir.

‖ The whole discharge was used for filling village tanks for domestic use due to scarcity condition.

¶ The whole discharge was utilized in filling village tanks for domestic use due to scarcity condition and to save

I-E—*concld.*

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
0·25	0·30	0·25	0·30	160·00	13·33	160·00	13·33	16th January to 15th October.	16th October to 15th January.
3·9	8·6	3·9	8·6	98·21	25·70	98·21	25·70	Do.	Do.
0·63	1·38	0·63	1·38	14·29	40·59	14·39	40·59	Do.	Do.
61·4	16·5	61·4	16·5	92·90	..	92·90	..	Do.	Do.
..	..	..	..	..	..	..	..		
..	..	..	..	..	..	..	..		

been calculated on these figures. In the rabi season in addition to pure rabi crops, perennial and eight months, crops are

measured.

to City and Cantonment of Poona.

weather season. Even during the monsoon and rabi seasons the channels are closed for days together due to rainfall and calculating average discharge and duties,

of irrigation is seasonal.

some area of rice under Khari sluices system.

STATEMENT I-F.

Statement showing water-rates per acre in force during 1936-37 on Irrigation Works in the Province of Bombay.

No.	Name of Work.	WATER-RATES. Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	PRODUCTIVE.											
	Southern Circle.											
1	Gadikeri Tank* ..	..	..	..	..	..	..	..	..			
2	Mavinkop Tank* ..	..	..	..	..	..	..	..	..			
	Central Circle.											
3	Ekruk Tank a ..	..	A 35 B 17½	8	3	5	7	..	2	*Nil.*	*Nil.*	*Nil.*
4	Shahada Channel a ..	..	A 28 B 14	8	3	5	6	..	2			
	UNPRODUCTIVE.											
	Northern Circle.											
5	Hathmati Canal a^1 ..	..	(b^4)	..	D 3 E 1	3	6	..	2			
	Khari Cut Canal a^1 ..	..	(b^4)	..	D 7 E 1	5	6	..	1 **2			
6	Wangroli Tank a^2 ..	..	(b^4)	6½	D 5 E 2½	4	6	..	1½			
7	Savli Tank a^4 ..	..	(b^4)	8	D 5 E 4	4	6	..	1½			
8	Saiat Tank a^5 ..	..	(b^4)	6½	D 4 E 2½	4	6	..	1½			
9	Tranza Nagrama Tanks a^2	..	(b^4)	6	D 4 E 2	4	6	..	1			
10	Futelao Tank a^6 ..	..	(b^4)	..	D 4 E 2	a^7 3 a^8 2	5	..	a^9 1	*Nil.*	*Nil.*	*Nil.*
	Deccan Irrigation Circle											
11	Nira Left Bank Canal. ..	§19 ¶16	M 45 C 66 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½		(e) 2			
12	Nira Right Bank Canal (*d*).	§19 ¶16	M 45 C 66 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½		(e) 2			
13	Mhaswad Tank (*d*) ..	..	A 28 B 14	8	3	5	6	..	(e) 2			

STATEMENT I-F—*contd.*

No.	Name of Work.	Irrigation in blocks.	Water-rates. Perennial.	Two Seasonal.	four Monsoon, months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept—contd.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*contd.*											
	Deccan Irrigation Circle—contd.											
14	Mutha Canals and Matoba Tank (*d*)—											
	Sugarcane under the Mutha Canals within the Poona City and Suburban Municipal and Cantonment limits or within one mile of those limits.	..	50									
	On all remaining land commanded by both the canals.	..	M 45	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
	Pan gardens ..	..	C 66									
	Perennial crops other than sugarcane and pan gardens.	..	B 22½									
	Pomegranates ..	..	15									
	Matoba Tank ..		(*c*)									
15	Kasurdi Tank (*d*) ..	..	A 28	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
16	Shirsuphal Tank (*d*) ..	..	B 14									
17	Bhadalvadi Tank (*d*) ..	..										
18	Godavari Right Bank Canal (*d*). Godavari Left Bank Canal (*d*).	§19 ¶16	M 45 C 66 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½	..	(*e*) 2			
19	Chankapur Tank—Girna Canal (*d*) ..	..	A 28 B 14	8	3	5	6	...	(*e*) 2			

STATEMENT I-F—*contd.*

No.	Name of Work.	WATER-RATES.								Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.			
	Works for which Capital and Revenue Accounts are kept—contd.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*contd.* *Deccan Irrigation Circle*—concld.											
20	Kadwa River Works (*d*)— Waghad Tank .. .. Palkhed Canal .. .. Ojhar-Tambat Canal .. .. Wadali Canal	..	A 28 B 14	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
21	Parsul Tank (*d*)											
22	Pravara Canals (*d*) ..	§19 ¶16	M 45 C 66 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½	..	(*e*) 2			
23	Bhatodi Tank (*d*)	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
	Central Circle.											
24	Kopergaon Tank a								(*e*) 2			
25	Ashti Tank a								(*e*) 2			
26	Pathri Tank a								(*e*) 2			
27	Jamda Canals a		A 28 B 14	8	3	5	6		(*e*) 2			
28	Hartala Tank a								(*e*) 2			
29	Mhaswa Tank a								(*e*) 2			
30	Lower Panjhra River Works a								(*e*) 2			
31	Krishna Canal a		A 32 B 16	8	3	5	8	..	(*e*) 2			
32	Revari Canal a		A 28 B 14	8	3	5	6	..	(*e*) 2			
33	Upper Man River Works a ..		A 28 B 14	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
34	Yerla River Irrigation Works a ..		A 28 B 14	8	3	5	6	..	(*e*) 2			
35	Chikhli Canal a		A 28 B 14	8	3	5	6	..	(*e*) 2			
36	Maini Tank a		A 28 B 14	8	3	5	6	..	(*e*) 2			

STATEMENT I-F—*concld.*

No.	Name of Work.	Water-rates.							Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	four Monsoon, months.	Rabi, four months.	Hot weather.	Miscellaneous.				
	Works for which Capital and Revenue Accounts are kept —concld.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE —*concld.*											
	Southern Circle.											
37	Gokak Canal, 1st Section and Storage Works (*u*)	..	(b^1) 27½ (b^2) 20	8	3	5	15	./	2	*Nil.*	*Nil.*	*Nil.*
38	Muchkundi Tank (*s*) ..	..	(b^1) 10 (b^2) 5		2	2	5	..	1			
39	Dambal Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
40	Medleri Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
41	Madag Tank (*w*) ..	..	(*x*) 12	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
42	Asundi Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
43	Dharma Canal (a^{10}) ..	..	..	..	(*t*) 4½	..	..	..	(*o*) 1 (*p*) 2			

NOTE.—(1) For lift irrigation in the Deccan Irrigation Circle the orders contained in G. R. No. 4771/27, dated 23rd December 1931, are that lift from Budkis should not be allowed at all in areas under the flow command of a canal and that in other areas it may be allowed only when the supply of water for irrigation is in excess of the demand at half the flow rates for all crops other than sugarcane for which full rate should be charged.

(2) For lift irrigation half the ordinary rates are charged in other circles.

(3) Double or treble the ordinary rates are charged as penal rates for taking without permission.

(4) Leakage or percolation rates are the same as ordinary rates.

(5) Water-rates for non-irrigational purposes are charged at the rates sanctioned by Government in each case.

(6) In the D. I. C. monsoon or two seasonal crops which take pre-seasonal waterings between the 25th April and the break of the monsoon are charged the following water rates per acre according to the date of first watering applied for and sanctioned, *vide* G. R. No. 5602/27, dated 9th December 1931 :—

Water taken from the date.	Rate for light type of crops.	Rate for medium type of crops.
	Rs.	Rs.
25th April	5	7½
5th May	4	6
15th May	3	4½

(7) A reserve rate of Rs. 3 per acre as a minimum rate has been sanctioned for lands let out for cultivators in the basin of Lake Beale—*vide* G. R. No. 2484, dated 12th June 1925.

(8) A flat rate of Rs. 2-8-0 per acre of culturable area has been sanctioned for the supply of water from the irrigation channel of Sangvi village near Bhatgar—*vide* G. R. No. 1849/27, dated 5th January 1932.

(9) The supply of water to the roadside trees, etc., is charged as follows :—
Rs. 10 per 100 Nos. for trees, planted along field boundries, roadside, etc.
Re. 1 per 100 Nos. of seedlings, shrubs, etc.

(10) Long term fruit trees on the Nira Right Bank Canal are charged at half rates for the first five years from the date of their plantation *vide* G. R. Nos. 2353-27, dated 13th December 1932.

(11) Short term cane and other perennials are charged in accordance with the scales laid down in G. R. Nos. 8670, dated 13th January 1927 and 3098/27, dated 6th November 1929 and 5602/27, dated 4th December 1935.

* Lands wholly assessed at consolidated rates.

§ Block rate for blocks in 1 : 3 proportion of sugarcane.

¶ Block rate for blocks in 1 : 4 proportion of sugarcane.

** For single watering for crops for which no application for irrigation throughout the season was previously submitted.

A—For sugarcane and pan gardens.

B—For perennial crops other than sugarcane.

C—For pan gardens for the whole year.

D—For rice.

E—For crops other than rice.

K—For pomegranates.

M—For sugarcane.

(*c*) On the Matoba tank the rate for sugarcane is the rate in force on irrigation works for short term cane.

(*d*) Rates sanctioned in G. R. No. 5602/27, dated 3rd December 1935.

(*e*) The single-watering rate applies to one pre-seasonal or post-seasonal watering to a sanctioned crop. If more than one such watering is taken, the full seasonal rate will be charged unless specifically ordered otherwise. The single watering rate is not applicable to seasonal irrigation.

(*j*) From 15th June to 14th October.

(*k*) From 16th October to 14th June.

(*l*) From 15th February to 14th June.

(*m*) From 15th June to 14th October or 15th July to 30th November.

(*n*) From 15th October to 14th February.

(*o*) From 15th June to 15th October.

(*p*) From 16th October to 14th June.

(*s*) In force up to 15th February 1942—*vide* G. R. No. 5459/27, dated 29th January 1936.

(*t*) From 15th June to 15th October or from 15th July to 30th November.

(*u*) In force up to 14th February 1938—*vide* G. R. No. 466/27, dated 25th October 1935.

(*w*) Rates sanctioned in G. R. No. 6095, dated 22nd October 1924 and G. R. No. 3187/27, dated 22nd August 1929 to be in force up to 14th February 1940—*vide* G. R. No. 3187/27, dated 1st February 1935.

(*x*) For sugarcane, betel leaves, etc., for 12 months.

(*y*) For eight months from 15th June to 14th February.

(*z*) For eight months from 15th October to 14th June or 1st August to 31st March.

a Rates to be in force up to 14th February 1938—*vide* G. R. No. 5602/27, dated 4th December 1935.

a^1 Rates sanctioned G. R. No. 5956/27, dated 26th May 1936.

a^2 Rates sanctioned in G. Rs. Nos. 825, dated 30th August 1924, and 825, dated 1st November 1926, and continued in G. R. No. 2881/27, dated 4th July 1929, are further continued up to 14th February 1940—*vide* G. R. No. 2881/27, dated 9th July 1936.

a^3 Rates to be in force up to 31st July 1938—*vide* G. R. No. 679/27, dated 11th October 1932.

a^4 Rates to be in force up to 15th June 1940—*vide* G. R. No. 2394/27, dated 1st June 1934.

a^5 Rates sanctioned in G. R. Nos. A-1-309, dated 15th February 1911, 5412, dated 15th December 1926; 2835/27, dated 4th October 1929, are to be in force up to 15th June 1940—*vide* G. R. No. 2835/27, dated 2nd July 1934.

a^6 Rates to be in force up to 14th February 1940—*vide* G. R. No. 2691/27, dated 9th July 1934.

a^7 For ordinary rabi.

a^8 For restorative crops grown after rice.

a^9 In either kharif or rabi season.

a^{10} Rates sanctioned in G. R. No. 293/27, of 9th August 1927 are to be in force up to 31st March 1937—*vide* G. R. No. 293/27, dated 14th February 1931.

(b^1) Rate for perennial 12 months.

(b^2) Rate for perennial 8 months.

(b^3) For sugarcane irrigation.

(b^4) Single seasonal rates for which water is taken shall be levied. *vide* G. R. No. 3343/27, dated 8th October 1929.

Statement showing expenditure on establishment in the Roads and Buildings and the Irrigation Branches of the P. W. D. from the year 1921-22 to 1936-37 and the percentage on the total outlay on works and repairs during that period in both the Branches.

Year.	Expenditure on Establishment in the Roads and Buildings Branch.							Expenditure on Establishment in the Irrigation Branch.
	41—Civil Works—Provincial (Transferred and Reserved).	60—Civil Works.	41—Civil Works—Central.	50—Military Works.	Deposit Works.	Total.	Percentage on the total outlay on works and repairs in the Roads and Buildings Branch.	55—Construction of Irrigation, Navigation, Embankment and Drainage Works.
1	2	3	4	5	6	7	8	9
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.
1921-22 ..	29,06,955	...	1,98,683	45,258	2,84,992	34,35,888	19·26	11,53,734
1922-23 ..	20,14,640	8,34,450	1,78,163	71,481	77,143	31,75,877	20·79	14,20,751
1923-24 ..	15,84,488	8,10,645	67,892	38,560	6,88,354	31,89,939	19·88	21,87,793
1924-25 ..	16,89,892	12,25,632	1,19,721	27,862	2,52,556	33,15,663	19·67	29,10,785
1925-26 ..	18,89,417	12,05,078	1,01,876	69,049	2,58,535	35,23,955	20·66	32,21,647
1926-27 ..	25,30,286	5,97,486	1,68,896	5,882	3,94,389	36,96,939	23·76	35,56,959
1927-28 ..	21,99,448	5,59,107	1,49,132	5,042	2,97,270	32,09,999	24·96	36,98,956
1928-29 ..	22,40,393	6,56,713	2,29,540	2,240	2,56,180	33,85,066	25·03	39,04,670
1929-30 ..	22,45,450	7,33,867	1,56,773	3,638	2,34,897	33,74,625	25·26	42,26,873
1930-31 ..	25,51,711	1,80,139	1,72,163	2,415	85,444	29,91,872	32·35	42,88,966
1931-32 ..	25,93,104	2,32,929	1,22,799	3,182	44,132	29,96,146	38·70	40,37,972
1932-33 ..	23,74,603	71,981	85,143	3,334	17,156	25,52,217	39·79	28,70,427
1933-34 ..	22,73,945	31,807	71,866	3,810	30,502	24,11,930	37·97	17,60,090
1934-35 ..	21,88,729	38,278	62,472	2,693	47,694	23,39,866	35·82	15,36,830
1935-36 ..	20,51,807	808	89,984	1,539	54,593	21,98,731	35·75	1,37,301
1936-37 ..	23,14,593	619	61,859	1,124	57,679	24,35,874	31·66	74,021

Year.	Expenditure on Establishment in the Irrigation Branch						Percentage on the total outlay of works and repairs in the Roads and Buildings and Irrigation Branches.
	XIII-Works for which capital accounts are kept.	15—Other Revenue Expenditure financed from Ordinary Revenues.	Deposit works	Total Establishment charges	Percentage on the total outlay on works and repairs in the Irrigation Branch.	Total Establishment charges in the Roads and Buildings and Irrigation Branches.	
1	10	11	12	13	14	15	16
	Rs.	Rs.	Rs.	Rs.		Rs.	
1921-22 ..	13,85,960	6,68,651	2,770	32,11,115	33·59	66,47,003	24·26
1922-23 ..	13,44,901	5,34,327	1,993	33,01,972	32·22	64,77,849	25·38
1923-24 ..	14,43,222	4,32,013	2,056	40,65,084	33·89	72,55,023	25·87
1924-25 ..	17,37,724	5,26,361	492	51,75,362	28·73	84,91,025	24·35
1925-26 ..	17,99,343	5,19,228	2,681	55,42,899	21·62	90,66,854	21·23
1926-27 ..	18,08,385	5,94,989	3,207	59,63,540	30·56	96,60,479	27·54
1927-28 ..	19,20,773	7,80,312	3,847	64,03,888	26·00	96,13,887	25·64
1928-29 ..	21,35,939	6,16,601	2,750	66,59,960	25·51	1,00,45,026	25·35
1929-30 ..	21,08,302	6,18,312	1,012	69,54,499	23·26	1,03,29,124	23·88
1930-31 ..	18,31,149	5,99,621	1,734	67,21,470	21·60	97,13,342	24·06
1931-32 ..	16,34,011	5,18,627	86	61,90,696	22·40	91,86,842	25·97
1932-33 ..	23,53,971	4,01,329	680	56,26,407	28·54	81,78,624	31·30
1933-34 ..	29,83,531	5,14,407	48,960	53,06,988	40·41	77,18,918	39·61
1934-35 ..	30,98,255	4,55,037	441	50,90,563	42·89	74,30,429	40·38
1935-36 ..	8,66,476	1,73,501	61	11,77,339	89·46	33,76,070	45·21
1936-37 ..	8,24,868	1,63,507	620	10,63,016	83·73	34,98,890	39·04

NOTE.—The percentage of the establishment charges on the cost of works and repairs in the Irrigation Branch (column 14) is generally higher than that in the Roads and Buildings Branch (column 8). The reason is largely that the establishment charges in the Irrigation Branch include the cost of Special Revenue Establishment employed entirely, on "revenue management" work on certain canal systems which has no connection with the execution of works and repairs, and that these charges also include cost of part of the time of Irrigation establishment spent on revenue management including the *control and distribution of water*, which is debited in the accounts to "revenue management" and not to execution of works and repairs. If these establishment charges debited in the accounts to "revenue management" are deducted from the total cost of establishment in the Irrigation Branch the percentage on the cost of works and repairs will not be so divergent. The increase in the rate per cent. in the R. & B. Branch is mainly due to decrease in outlay on "works" and "repairs". Establishment charges cannot be reduced in the same ratio in which expenditure on works is reduced. A mere overall percentage on expenditure on work is inaccurate.

The figures for the years 1921-22 to 1934-35 inclusive pertain to the late Bombay Province including Sind.

Administration Report of Irrigation Works in the Province of Bombay for the year 1936-37: Review of—.

GOVERNMENT OF BOMBAY.

PUBLIC WORKS DEPARTMENT.

Resolution No. P. 22.

Bombay Castle, 28th September 1938.

RESOLUTION OF GOVERNMENT.

The Irrigation works dealt with in this Report, which covers the period from 1st April 1936 to 31st March 1937, fall into two categories, viz. (*i*) Tanks and canals for which Capital and Revenue Accounts are kept and (*ii*) small tanks, bandharas and drainage channels, for which neither Capital nor Revenue Accounts are kept. The works included under (*i*) are described in detail in section I of the Report. The works mentioned under (*ii*) are small and numerous and a brief account of them is given in Section II of the Report.

2. The total capital outlay on works for which Capital and Revenue Accounts are kept, to the end of the year under review, amounted to Rs. 10,75,10,345.

Including an area of 8,758 acres, on which a consolidated water and land assessment is levied, the total area irrigated was 313,973 acres as compared with 214,303 acres in the previous year.

The gross assessed revenue amounted to Rs. 34,77,222 as compared with Rs. 28,03,346 during the previous year and Rs. 25,91,579, the average of the past three years.

The unrealised balance of revenue demands at the close of the year amounted to Rs. 16,77,334. A portion of this amount has since been recovered and steps have been taken to effect the early recovery of the balance outstanding.

The working expenses amounted to Rs. 17,29,930 compared with Rs. 17,23,000 in the previous year.

The net revenue (after deducting working expenses) amounted to:—

		Rs.
(*i*) On the basis of assessment	..	17,47,292
(*ii*) On the basis of realisation	..	13,36,711

as compared with Rs. 10,80,346 and Rs. 11,07,067, respectively, during the previous year.

MG-1 Bk F 12—10

gitized with financial assistance from t
Government of Maharashtra
on 22 July, 2017

The statement embodied in paragraph 13 of the Report shows the financial results of the more important works for which Capital and Revenue Accounts are kept.

3. The total area irrigated by works for which neither Capital nor Revenue Accounts are kept was 153,745 acres, and the gross revenue realised was Rs. 7,28,272. The total expenditure incurred on improvements and repairs, inclusive of the collection charges, amounted to Rs. 5,42,955.

By order of the Governor of Bombay,

U. N. MAHIDA,

Deputy Secretary to Government.

To

The Finance Department.
The Revenue Department.
The Commissioner, Northern Division.
The Commissioner, Central Division.
The Commissioner, Southern Division.
The Director of Land Records.
The Director of Agriculture.
The Commissioner of Labour and Director of Information.
All Superintending Engineers of Circles.
All Collectors (except those of Bombay and Bombay Suburban District, Thana and Kolaba Districts).
The Accountant General, Bombay.
All Executive Engineers in charge of Irrigation Works.
The Secretary to the Governor of Bombay.
The Secretary to the High Commissioner for India (by letter).

BOMBAY : PRINTED AT THE GOVERNMENT CENTRAL PRESS.